The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XV. No. 373 AUGUST 21, 1926

Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.6.

Contents

	PAGE
EDITORIAL NOTES: Reopening Negotiations; Chemical Trade Returns; Manchester Dyestuff Appointments; A New Lime Burning Method; I. G. Expansion; Colloidal Tar; Decolourising Carbons; A German Non-Knocking Motor Fuel	173
Chemical Trade Returns for July	176
Russian Chemical Industry	177
Carborundum as a Refractory Material	178
The Dextrose Industry in the United States	179
Correspondence: Converted Coal; British Association of Chemists: The Chemistry House Discussion	180
"Gasin": A German Non-Knocking Motor Fuel	181
From Week to Week	182
References to Current Literature	183
Patent Literature	184
Weekly Chemical Prices and Market Reports	187
Company News; New Chemical Trade Marks; Chemical Trade Inquiries	192
Commercial Intelligence; New Companies Registered	194

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

Reopening Negotiations

THE action taken by the delegate conference of the Miners' Federation on Tuesday may prove an important step towards a restoration of peace in the coal industry. It means at least the reopening of negotiations with the mineowners and with the Government, and until negotiations were resumed the deadlock was bound to continue. The only conditions imposed on the executive committee are that the negotiations must be on a national basis, and must not be conducted by districts separately, and that the result of any negotiations shall be reported to a future conference, so that the districts may finally decide on them. By the time this issue is out of the Press negotiations may have been reopened, and everyone will hope for a satisfactory issue.

The coal strike has not, it is true, disorganised and weakened national industry to the extent that was feared, but the effects are now becoming more marked, and a prolongation would be a disaster. If terms are agreed, it is clear that they must remain in force for some time, and one certain benefit will be an assured period of peace. The mere knowledge that a settlement had been arrived at would have an excellent effect on trade, for, although some time must elapse before normal supplies are resumed, it would then only be a matter of time. The chemical industry has stood the strain of the coal strike better than many, but it has been a period of great anxiety, and the new prospect opened this week of restored industrial peace and activity will be very welcome to all.

Chemical Trade Returns

THE Board of Trade returns for the month of July show that in spite of both the general strike and the coal strike, chemical overseas trade has been larger in bulk and value than during July of last year. The imports of chemicals, drugs, dyes and colours were of the value of £1,288,860 against £1,073,018 last year, while the exports were of the value of £2,136,061 as compared with £2,034,635 last year. The increase of exports is, in the circumstances, a remarkable testimony to the resources of the chemical industry.

As regards the items, it is interesting to note that sulphuric and tartaric acids show considerable increases, while there is also an appreciable advance in ammonium chloride. Ammonium sulphate exports, however, are down from £261,125 to £221,681, the principal decline being in the trade with Spain and the Canaries, which is large enough to wipe off the increases in Italy, Dutch East Indies, Japan, and British West India islands. Coal tar product exports are considerably lower, the decline being principally in carbolic acid and tar and creosote oils. There has been a notable advance in glycerine, both crude and distilled; potassium compounds are higher, but sodium compounds have declined. There is an appreciable increase in the export of dyes and dyestuffs, and the valuable trade in painters' colours and materials shows a further advance. Among the more notable increases in the imports are coal tar products (£175,643 against £37,469), and alizarine (£17,031 against £2,987).

Manchester Dyestuff Appointments

THE Manchester Municipal College of Technology has now accomplished the difficult task of filling the gaps in the staff of the sections devoted to dyestuffs and the application thereof, occasioned by the death of Dr. Knecht, the appointment of Dr. Rowe to a professorship at Leeds University, and the acceptance of a leading position by Professor Huebner in the Nuera Artificial Silk manufacturing organisation. The appointment of Dr. Mason has already been announced, and it is understood that the arrangements for the appointment of Mr. F. Scholefield, M.Sc., F.I.C., of Burgess, Ledward and Co., Ltd., Walkden, are now completed. It is reported that Dr. Mason will deal with the chemistry of dyestuffs, and that Mr. Scholefield will have as his sphere the application of dyestuffs,

finishing processes, and textile fibres. The college is to be congratulated on its successful accomplishment, as there would appear to be every reason to anticipate a continuance of the excellent work of the sections mentioned under the leadership of Dr. Mason and Mr. Scholefield. The latter's appointment has created considerable surprise among his friends in the dyeing industry, as the change from a successful industrial career to an academic career is somewhat unusual in this country. Their view is that so far as the college is concerned it is a move in the right direction, and that so far as industry is concerned the loss must be considered in the light of seed which must be withheld from consumption if future harvests are to be assured.

A New Lime Burning Method

An outstanding problem in the lime industry is the profitable utilisation of the small stone, known as spalls and fines. Stone under four inches in size cannot be calcined successfully in the shaft kiln, and every day many tons are either entirely wasted or sold at prices so low as scarcely to cover the cost of production. Lime is an essential commodity in the chemical, agricultural, and building industries, and any improvement in quarrying or operation processes that will eliminate waste is, therefore, of real economic importance. The U.S.A. Bureau of Mines, through the Nonmetallic Minerals Station at New Brunswick, N.J., has given much study to possible solutions for this waste problem. It has been found that fines are successfully calcined in the rotary kiln, and that rotary kilns are gradually being brought to a higher point of efficiency, but that rotary kilns present certain serious disadvantages. Having in view the development of equipment less costly, less cumbersome, easier to manipulate and of higher fuel efficiency than the rotary kiln, exhaustive experiments have been made with a sintering machine such as is used for roasting sulphide ores.

The sintering machine consists essentially of a series of travelling pallets with perforated floors. The pallets loaded with crushed limestone pass beneath a burner which supplies an intense heat, and over a suction box which maintains a downward draft to carry the flame through the charge. Complete calcination is attained in 30 to 60 minutes. Small scale tests were followed by more complete tests on a small-size standard commercial machine. A general average of all tests made gave a fuel ratio of 5·5 lb. of lime per pound of kerosene plus 5 per cent. of coal which was mixed with the charge. This compares favourably with present commercial practice in America. Several important changes may be found necessary before the highest point of efficiency is attained. The advantages claimed for the sintering machine are low first cost, low maintenance cost, fair fuel ratio, continuous operation, and ability to use small stone. The results of the investigation indicate that the machine has excellent possibilities for the production of lime from small stone, but considerable redesigning is necessary to adapt it to this use. A detailed description of the machine, the changes made in its construction, and the experiments conducted with it are given in Serial 2762, entitled "Manufacture of lime from small stone with a sintering machine," a copy of which may be obtained on request from the Bureau of Mines, Department of Commerce, Washington, D.C.

I.G. Expansion

Further evidence of the scale on which the I.G. Farbenindustrie is expanding was furnished this week by the scheme for the issue of 450,000,000 marks worth of new shares. This issue, which is to be considered by the shareholders on September 1, will bring the capital up to 1,100 million marks, a sum only approached by one other German concern, the Vereinigte Stahlwerke A.G. with 800 million marks. The principal reasons for this large increase of capital are the recent absorption of the Köln-Rottweil and other explosives firms, and the trust's activities in the field of coal distillation—to be more precise, its interest in the commercial exploitation of the Bergius process for converting coal into oil, which seems to be approaching the commercial stage.

Many months ago a representative of The Chemical Age at Ludwigshaven was informed of the experimental work then proceeding, but no hint could be obtained as to what success had been secured. This silence, as a well-known British expert remarked at the time, might mean one of two things—either that the results were of too important a character to be disclosed or that there were no results at all. The announcement concerning the new capital, together with the information we published the other week respecting British interests in the Bergius process, makes it clear that progress is being made with the experimental work, and the commercial stage may be nearer than most people imagine. As in a previous announcement, the board is for obvious reasons very cautious in its reference to future developments, but there is a general belief that they are related to the arrangements between the trust and the Standard Oil and Shell groups. Among the purposes to which the new funds are to be applied are the development of nitrogen plant and the trade in nitrogenous products and the construction of a new coal distillation plant at Merseburg. As the result of these developments the shares of the I.G. have risen considerably. In the British share market a recent feature has been the steady advance of B.D.C. shares.

Possibilities of Colloidal Tar

Of all reasonably priced materials used for road construction tar and pitch possess the highest elasticity and the ability to repair automatically all damage done. The application of tar, pitch, and bitumen is usually carried out in the hot condition and, in consequence, if these materials are employed for the covering of roads it is necessary to move heavy tar boilers, fuel, and other accessories, to heat the materials on the spot, causing annoyance to the neighbourhood, and then to spread a dangerously inflammable mass. These difficulties have been recognised for many years, particularly in cases where tar had to be mixed with other inflammable materials; superheated tar easily catches fire, frequently by mere exposure to air.

It is now quite a number of years since the idea was conceived of mixing tar with water and producing an emulsion or paste which could be applied in a safe and clean manner. The production of such emulsions is not at all easy because tars, pitches, asphalts, and bitumens—with regard to free carbon, phenolic, acidic and basic bodies, sulphur compounds and so on—differ more in their composition and characteristics than almost any other materials produced. As the stability of emulsions depends considerably on these components, and as the nature and quantity of emulsifying agents must be varied accordingly, the manufacture of these emulsions offers a fresh problem every time. Nor is stability the only property required. The emulsions must be made up in such a manner that they break down readily after being applied. For example, if a tar emulsion is used for the spraying of roads, it is important that it should break down as quickly as possible, or it will penetrate so deeply into the ground as to be useless. Further, if the emulsion dries up it should not be possible to re-dissolve it, since in that case rain would readily wash away the tar deposited on the streets. Another important point is that the particles of the emulsion should be really fine, or the penetration may prove insufficient.

The methods of producing colloidal tar fall into two groups. In one case the tar is mixed with water containing a very large proportion of various stabilisers and stirred by slow-moving machinery until emulsification takes place. Another method which is gaining rapidly in popularity consists in mixing hot tar with water containing a relatively small proportion of stabiliser and passing it through a colloid mill. These fast machines have proved very suitable for the production of tar emulsions. The reason is obvious; on account of the small proportion of stabiliser, the material forms a much more satisfactory deposit and is not liable to re-emulsify.

The Action of Decolourising Carbons

DECOLOURISING carbons have for long been employed in industry, their main application being, perhaps, in connection with the bleaching of sugar and glucose solutions, and yet it remains a somewhat remarkable fact that their precise action still requires to be explained. It is doubtful in our opinion if adsorption alone accounts for the action of decolourising carbon. So much depends on the nature of the impurities and that of the medium, that in formulating hypotheses it is necessary to give due consideration to chemical relationships. Otherwise it is utterly impossible to explain why one material is very powerful in decolourising oils, and entirely incapable of acting in an aqueous medium and *vice versa*. We suggest that the immense surfaces allow the forces of molecular and chemical character to come into play to produce loose combinations between the adsorbent and the "impurities" which are thus removed from the fluid. As so little is known of the mechanism of the action of the decolourising carbons, a great deal of their successful employment in practice is a matter of individual skill. At the same time, the investigation of adsorbents and their practical application are progressing steadily, and we may look forward to a time when the knowledge of these phenomena will be as precise as that of other branches of physical chemistry.

The adsorbing action of decolourising carbon and of similar bodies is now generally ascribed to surface action and capillary effects, and, in addition, to electrical phenomena. Only by admitting a system of such properties does it become possible to explain why activated carbon or silica gel are capable of adsorbing a volume of inert gases many times greater than the capacity of the pores of the adsorbent body. There are, of course, cases where the presence of a body with a very active surface may catalytically induce reactions inside the fluid which result in the transformation of the colouring material into complexes, these then being removed either by adsorption or precipitation. Altogether, the problems connected with the industrial and scientific study of decolourising carbons form a fascinating subject of immense theoretical and practical importance.

A German Non-Knocking Fuel

ELSEWHERE in this issue is published a translation of an article which has just appeared in the German Press on the non-knocking motor fuel, "Gasin," reference to which was made in THE CHEMICAL AGE some time ago. The composition of the material has not been revealed, and this makes judgment somewhat difficult at the moment. In the German Press it is claimed that the new fuel is not only immune from knocking, but very economical in use as compared with others. The producers of the fuel say that they were led to prepare it by the discovery that the knocking proclivities of fuels are related to their electrical conductivity: non-conductors appear to give rise to knocking, while good conductors are immune from this disadvantage. The theoretical basis of this view is developed at some length, and the results of tests which support it are given. Lately there has been a slight lull in the multitude of theories respecting knocking which have been put forward, but the one now expressed is surprisingly simple. It appears that "Gasin" is prepared by adding to some motor fuel a substance which increases its conductivity. Moreover, the substance in question has a "refining" effect on the fuel, due to the fact that it easily gives oxygen by fission.

Books Received

STONE DECAY AND ITS PREVENTION. By J. E. Marsh. Oxford: Basil Blackwell. Pp. 58. 3s. 6d.

ORGANIC SYNTHESIS: VOLUME VI. An annual publication of satisfactory methods for the preparation of organic chemicals. Edited by Henry Gilman and others. London: Chapman and Hall, Ltd. Pp. 120. 7s. 6d.

The Calendar

Aug 31 to Sept 12	World Power Conference.	Basle, Switzerland.
Sept 1 to 4	Institute of Metals: Autumn meeting.	Liége, Belgium.
6 to 11	American Chemical Society: 50th Anniversary.	Philadelphia, Pennsylvania.
9 to 10	Refractory Materials Section, Ceramic Society.	Leeds.
20 to 24	Chemists' Exhibition.	St. Andrew's Hall, Glasgow.

Chemical Trade Returns for July

Increase on Last Year in Imports and Exports

THE Board of Trade Returns for July show an increase in both chemical imports and chemical exports, as compared with the corresponding month of last year, though, if the seven months of the present year are compared with those of 1925, there is a considerable decline in exports. The imports of chemicals, drugs, dyes, and colours during July amounted to £1,288,860, an increase of £215,842 on July of 1925, and of £142,450 on July of 1924. The corresponding exports were of the value of £2,136,061, an increase of £101,426 on July of 1925. Chemical re-exports for July, amounting to £84,558, showed a decline of £13,768 on July of 1925 and of £15,932 on July of 1924. Detailed figures are given below :—

Imports

	Quantities. Month ending July 31.		Value. Month ending July 31.	
CHEMICAL MANUFACTURES AND PRODUCTS—	1925.	1926.	1925. £	1926. £
Acid Acetic..... tons	634	773	30,486	33,360
Acid Tartaric .... cwt.	5,550	4,432	27,223	21,248
Bleaching Materials ,,	8,087	4,199	7,878	6,286
Borax..... ,,	10,942	7,258	12,942	8,200
Calcium Carbide .. ,,	58,559	39,145	43,170	24,407
Coal Tar Products value	—	—	37,469	175,643
Glycerine, Crude.. cwt.	336	—	742	—
Glycerine, Distilled ,,	145	81	525	328
Red Lead and Orange Lead ..... ,,	2,669	4,392	4,028	7,666
Nickel Oxide..... ,,	4,105	90	21,109	377
Potassium Nitrate ,,	3,981	10,421	4,865	11,333
All other Compounds ,,	47,521	43,008	28,958	26,677
Sodium Nitrate ,,	10,788	17,539	6,813	10,992
All other Compounds ,,	43,278	112,853	28,519	68,645
Tartar, Cream of ,,	5,751	7,070	18,855	25,407
Zinc Oxide ..... tons	1,044	1,086	34,241	38,275
All other Sorts value	—	—	238,121	323,911
DRUGS, MEDICINES, etc.—				
Quinine and Quinine Salts ..... oz.	115,359	101,63·	11,637	8,312
Bark Cinchona cwt.	1,432	1,583	7,996	5,863
Other Sorts.....value	—	—	128,090	129,817
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products ..... cwt.	151	—	1,547	—
Alizarine ..... ,,	178	312	2,987	17,031
Indigo, Synthetic ,,	—	—	—	—
Other Sorts ..... ,,	2,443	2,431	54,101	53,285
Cutch..... ,,	7,074	3,662	11,144	5,571
Other Dyeing Sorts ,,	6,007	3,186	14,563	11,095
Indigo, Natural .. ,,	4	57	100	1,373
Extracts for Tanning ,,	98,082	104,905	94,655	101,495
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground.. cwt.	71,641	74,808	17,722	17,4·8
White Lead (dry).. ,,	15,527	14,635	30,003	27,939
All other Sorts .. ,,	177,384	97,434	152,529	126,886
Total of Chemicals, Drugs, Dyes and Colours .... value	—	—	1,073,018	1,288,860

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—			£	£
Acid Sulphuric .... cwt.	1,116	1,907	1,476	3,382
Acid Tartaric .... ,,	1,052	1,648	5,913	8,783
Ammonium Chloride tons	197	386	6,508	9,845
Ammonium Sulphate—				
To France .... tons	—	—	—	—
Spain and Canaries .... ,,	12,951	7,949	150,538	84,275
Italy ..... ,,	20	195	246	2,336
Dutch East Indies,,	322	1,967	4,124	21,969
Japan..... ,,	861	3,751	11,229	41,589
British West India Islands (including Bahamas) and British Guiana tons	68σ	1,451	8,562	16,017
Other Countries ,,	7,189	4,805	86,426	55,495
Total ..... ,,	22,023	20,118	261,125	221,681
BLEACHING POWDER cwt.	19,538	33,749	10,045	16,539
COAL TAR PRODUCTS—				
Anthracene .... cwt.	—	—	—	—
Benzol and Toluol galls.	1,116	272	140	47
Ca·bolic Acid .. cwt.	17,353	9,331	24,941	13,323
Naphtha ..... galls.	5,159	3,534	491	347
Naphthalene .. cwt.	554	784	521	361
Tar Oil, Creosote Oil, etc. .... galls.	7,010,827	4,576,209	219,943	139,583
Other Sorts .... cwt.	30,521	51,648	21,869	27,697
Total .... value	—	—	267,905	181,358
COPPER, Sulphate of tons	1,699	1,530	37,644	33,694
Disinfectants, Insecticides, etc. ..... cwt.	33,457	41,209	84,977	100,188
Glycerine, Crude .. ,,	5,986	10,179	15,719	31,635
Glycerine, Distilled ,,	9,197	28,999	35,253	125,256
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .... cwt.	1,990	1,916	3,975	3,792
Nitrate (Saltpetre) ,,	1,335	1,985	2,652	3,875
All other Sorts .. ,,	1,095	1,296	13,046	13,858
Total ..... ,,	4,420	5,197	19,673	21,525
SODIUM COMPOUNDS—				
Carbonate .... cwt.	404,900	442,080	119,174	137,748
Caustic ..... ,,	135,940	140,165	106,974	100,475
Chromate and Bichromate ..... ,,	2,018	2,340	3,427	3,037
Sulphate, including Salt Cake ..... ,,	87,029	182,089	14,195	24,231
All other Sorts .. ,,	49,903	45,141	83,078	34,062
Total ..... ,,	679,790	811,815	326,848	299,553
ZINC OXIDE ..... tons	645	123	23,289	5,519
Chemical Manufactures, etc., all other Sorts value	—	—	304,634	325,932
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs) .... value	—	—	1,401,009	1,384,890
DRUGS, MEDICINES, etc.—				
Quinine and Quinine Salts ..... oz.	169,170	176,240	22,073	18,095
Opium ..... lb.	31	830	53	1,199
All other Sorts.. value	—	—	229,155	276,875
Total ..... ,,	—	—	251,281	296,169
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	6,237	6,279	47,417	57,272
Other Sorts ..... ,,	3,767	5,571	4,848	7,782
Total ..... ,,	10,004	11,850	52,265	65,054
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground cwt.	13,300	8,493	5,691	3,140
White Lead (dry) ,,	12,363	6,125	29,196	12,778
Paints and Colours, ground in Oil or Water ..... ,,	35,115	59,191	85,524	133,145
Paints and Enamels Prepared .... ,,	30,576	35,905	102,851	116,872
All other Sorts ,,	54,872	69,220	106,818	124,013
Total ..... ,,	146,226	178,934	330,080	389,948
Total of Chemicals, Drugs, Dyes and Colours .... value	—	—	2,034,635	2,136,061

Re-exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric .. cwt.	68	97	435	554
Borax..... ,,	205	510	255	574
Coal Tar Products value	—	—	1,543	1,087
Glycerine, Crude cwt.	10	63	30	242
Glycerine, Distilled ,,	—	—	—	—
Potassium Nitrate ,,	54	42	93	58
Sodium Nitrate .. ,,	3,038	449	1,863	313
Tartar, Cream of .. ,,	594	542	2,242	2,102
All other Sorts value	—	—	19,089	20,716
DRUGS, MEDICINES, etc.—				
Quinine and Quinine Salts ..... oz.	17,460	15,443	2,277	1,663
Bark Cinchona cwt.	375	386	3,009	2,329
All other Sorts value	—	—	50,145	40,712

	Quantities. Month ending July 31.		Value. Month ending July 31.	
	1925.	1926.	1925.	1926.
			£	£
DYES AND DYESTUFFS—				
Cutch ..... cwt.	1,304	1,492	2,259	2,322
All other Dyeing Extracts ..... ,,	147	468	1,143	2,051
Indigo, Natural .. ,,	13	17	366	569
Extracts for Tanning ,,	6,665	1,375	6,660	1,600
Painters' Colours and materials ..... ,,	1,883	1,376	6,049	5,525
Total of Chemicals, Drugs, Dyes and Colours .... value	—	—	98,326	84,558

Russian Chemical Industry

Production One Quarter of That in 1913

How critical the condition of the Russian chemical industry still continues to be has just been set forth by Mr. P. I. Duboff —representing the council assembly of the chemical industry —in connection with the proposed adoption of measures by the Council of Labour and Defence for the restoration and development of the industry. As the latter council is the deciding organisation next to the Council of the Peoples' Commissioners, there is some prospect of its decisions being carried into effect, provided that due provision is made for the capital expenditure concerned, this being the main problem in this as in the other producing industries in Russia.

In the course of a communication to the Moscow *Ekon. Sjisn* early in June Mr. Duboff is reported to have stated that from the standpoint of national economy, the chemical industry occupies an important position as the basis for the supply of products to all branches of industry, the activity of quite a number of these branches being dependent upon the supply of chemical products. In particular the basic chemical industry is considered to be of important significance to the country; but its development lags behind the general expansion which has taken place in all State industries. As a consequence, beginning with the year 1924-25, the chemical industry through its trusts was under the necessity of refusing to enter into contracts for the systematic supply of chemical products. Moreover in March, 1926, the sales of the trusts amounted to a value of only 970,000 roubles, whereas the quantity sold in the same month in 1925 represented a value of 2,095,000 roubles.

The situation in regard to alkalis is stated to be exceptionally difficult. According to data supplied by the soda committee of the Supreme Council of National Economy, the production of calcined soda amounts to 60 per cent. of the requirements of the market; that of chloride of lime is 31·4 per cent.; and that of chrome salts is 27·5 per cent. The shortage of these products is compensated in individual parts by imports, but this dependence upon other countries is held to represent a danger to the country.

The capital value (works, plant, etc.) of the basic chemical industry amounts to 80,000,000 roubles, but in consequence of the worn-out condition of the works, the technical backwardness of the equipment, and the manner in which the works are dispersed, the works are only utilised to a slight extent. In the present year a total sum of 22,765,000 roubles has been assigned for works of construction and restoration of the undertakings embodied in the three trusts known as the Chimugol (Coal-Chemical, in South Russia), the Northern, and the Moscow trusts. But the actual provision of these funds has been considerably delayed, an amount of only 8,990,000 roubles having been rendered available by the end of May, the eighth month of the present fiscal year. In general the inadequacy of working funds is jeopardising the future activity of the trusts. The raw material question also is said to leave much to be desired, the supply of pyrites and phosphorus in particular being very unfavourable. The latter is not only insufficient, but not up to required quality, while the production next year is estimated at only 63,000 tons as compared with a demand which is expected to be 102,000 tons.

The publication of the above information was followed on June 17th by a meeting of the Council of Labour and Defence in Moscow, when a representative of the Supreme Council of National Economy presented a report on the subject. According to the report, while the average growth of all State industries in the past year (1924-25) brought these to a level of 70 per cent. of the pre-war level, in the case of the chemical industry alone the level of the production was only 24 per cent. of that of 1913.

The programme for the present fiscal year provides for a 50 per cent. increase in production over that of 1924-25. It is computed that the gross total production of different chemical products will amount to 660,600 tons of an estimated prime cost value of 56,000,000 roubles; but even such an output would be unable fully to satisfy the requirements of the market. In this connection the report proceeded to state that the further development of the industry depends upon the supply of raw materials. If measures are not duly taken for ensuring this supply, it is considered that the industry will be in a very difficult position. Such measures, it is suggested, should be directed towards the extension of the production of pyrites at the Ural works and of soda products at the Vyat mines. It is further considered that the working capital of the trusts must be increased, as they are now generally operating on the basis of loans and experiencing financial difficulties.

After having considered the report and the ensuing discussion the Council of Labour and Defence gave its approval to the above mentioned productive programme, which has naturally been in progress already for some months as far as circumstances have permitted, and commissioned the Supreme Council of National Economy to see that the trusts carry it out up to the maximum limits of the capital works which are provided for under the programme. Further, the latter Council is to include in the plan of capital construction works for the extension of the equipment, and to adopt measures for increased production of raw materials, including pyrites and phosphorus.

Aniline Dyes

The Council of Labour and Defence then proceeded to consider and to confirm a scheme—which is also already in progress—submitted by the Supreme Council for the development of the aniline dye industry in 1925-26, which provides for a total gross production of 31,740 tons of products of the estimated value of 21,858,000 roubles, or 75 per cent. more than in 1924-25. Taking into account the fact that the satisfaction of the requirements of the textile industry is based upon the execution of the programme in question, the Council entrusted the Supreme Council with the duty of supervising the completion of the programme, and commissioned the latter and the National Commissariat for Foreign Trade to pay due attention to the grant of licences for the import of the intermediate products required by the Aniline Dye Trust. At the same time the Council requested the Supreme Council to complete the preparation of a five years' programme for the development of the aniline dye industry on the basis of the amalgamation of the undertakings concerned and the necessity for organising the bulk production of intermediate products within the country itself.

Synthetic Ammonia from Water Gas

A PROCESS has recently been patented for obtaining hydrogen from water gas and eliminating the carbon monoxide from the hydrogen, which is a necessary phase in the manufacture of synthetic ammonia, according to reports from Rome. The new process was patented by Professor Cicali, of Bologna, the report declares, and is a physical rather than a chemical method. The process is founded on original researches in connection with the physical properties of certain gaseous mixtures which are physically similar. From researches the new principle of physical substitution is deduced. In applying this principle to the production of pure hydrogen by Professor Cicali's process, a specific quantity of cold nitrogen gas is introduced into the hydrogen under pressure with the result that the remaining traces of carbon monoxide are liquefied and pure hydrogen results. The process is being tried out industrially, and it is hoped that a report will soon be made public as to its practicability and economy. The hydrogen used at present in Italy for the most part is obtained by the electrolytic process in a pure form. The plants which use the Claude system, however, sometimes derive their supply of hydrogen from coke-oven gas, which contains also large amounts of methane.

Carborundum as a Refractory Material

Its Increasing Use in Germany

Carborundum has hitherto been regarded more for its abrasive or grinding properties than as a refractory material. Judging from the following article by B. Kleinschmidt, translated from "Technische Blätter," No. 13, 1926, p. 99, carborundum is rapidly growing in appreciation as a refractory material possessing valuable and special properties.

THE manufacture of refractory materials has become an important industry in Germany, particularly in the Rhineland and Westphalian districts. The constant aim is to improve the refractories that have long been in use, as well as to discover new material either natural or artificial which can be applied to refractory purposes. A favourable influence on the industry of the manufacture of refractory materials has been the introduction of the electric furnace product, which is essentially silicon carbide, but is better known under the registered trade name of "Carborundum."

This material is by no means new, having first been produced about 30 years ago. But for a considerable number of years after it was discovered it was used only as an abrasive. During the last decade, however, its highly refractory properties have become recognised chiefly in the United States and England, where the material has been used for a number of rather minor purposes, for which its refractory character and other properties have made it specially suitable.

Carborundum was the discovery of the American electrochemist Acheson, who started his researches about 1891. He was led to investigate the possibilities of obtaining a very hard material from the fact that carbon in the crystal form of the diamond is the hardest substance known, and also the fact that carbon is the hardening constituent in steel. Acheson, therefore, experimented with a mixture of carbon and clay at a very high temperature in the electric furnace, and succeeded in obtaining the very hard product known as carborundum. It was established some time after that this product was essentially silicon carbide, but the trade name has been retained in use to the present time.

Carborundum is manufactured to-day in great quantities out of coal and quartz sand, and certain other small additions. The reaction may be expressed by the following equation:

$$SiO_2 + 3C = SiC + 2CO,$$

although it is believed that a number of more or less complicated intermediate reactions are involved. The desired crystalline form is obtained only at a temperature of 1,850° C. and it remains stable until a temperature of 2,249° C. is reached, when the carbide dissociates into silicon vapour and graphite carbon.

Some Properties of Carborundum

A valuable property of the material, from a refractory point of view, is that it remains rigid and shows no signs of fusion below the decomposing temperature. It is now recognised, both in producing and consuming circles, that in silicon carbide a refractory material of unusual and exceedingly valuable properties exists. Even when mixed with a small quantity of binding material it retains practically all of its mechanical strength, in which respect it behaves unlike some other refractories such as silica, fireclay, and chrome ironstone, which commence to soften considerably below their fusion temperatures. When mixed with a clay binding material, carborundum retains its high refractory properties, but obviously it is necessary to make a judicious selection of the binding material used, and to employ the minimum quantity that will effect the purpose. The heat conductivity of carborundum is about seven times greater than that of fireclay stone, and exceeds that of almost all other refractory materials.

The following table, issued by the Deutschen Carborundumwerken G.m.b.H., contains some comparative data of different kinds of refractory material, and is of considerable interest:

Material.	Spec. Heat.	Heat Conductivity.	Crushing Strength in lb. per sq. in.
Fireclay-stone	0·192	0·0034	1,050
Magnesite	0·220	0·0071	4,800
Chromite	0·174	0·0067	3,900
Carborundum (Refrax) ..	0·162	0·0275	12,500
Carborundum (Carbofrax)	0·180	0·0243	14,700
Silica	0·191	0·0020	2,300

Refrax consists of a dense mass of interlocked carborundum crystals, without addition of binding material. This material thus possesses the refractoriness of silicon carbide. The carbofrax crucible consists of silicon carbide and a small quantity of fireclay; its resistance to high temperature and its heat conductivity, as shown in the table, is somewhat less than that of refrax stone.

Good heat-conducting properties in a refractory is in many cases an advantage, and always where heat is to be conveyed through the material, as in crucibles, evaporating shells, muffle furnaces, and indirect heating furnaces of all types, such as zinc retorts, dividing walls in coke ovens, recuperators, regenerators, etc. On the other hand, of course, there are many cases where low heat conductivity in the refractory is desirable.

The relatively high heat conductivity and heat capacity of carborundum are not only important from the point of view of fuel economy, but confer on articles or blocks made of it the capacity to withstand, without rupture, sudden temperature fluctuations, and temperature changes at the surface are rapidly distributed through the mass. At temperatures from 200 to 900° C., silicon carbide has an expansion co-efficient of 0·00000047, compared with 0·00000567 to 0·0000161 for fireclay stone; that of fused alumina is 0·00000866. Silicon carbide articles are therefore practically indestructible by temperature change.

The dense structure of carborundum also gives it a high resistance to change of form when strongly heated. The average porosity of carborundum stone is 15 to 20 per cent. It has a very great mechanical strength which, combined with a hardness of about 9·6 on Mohr's scale, gives it great durability when exposed to abrasive action, such as the charging and discharging of coke retorts, and some other operations. This property is of prominent importance in many furnace operations.

The only acid reagent that attacks carborundum is a mixture of fluoric and nitric acids. On the contrary, it is readily attacked by alkalis, basic slags, and molten iron or steel. The specific gravity of carborundum is from 3·1 to 3·2, and wares made from it have a density of about 2·1 to 2·5.

In view of the fact that silicon carbide requires a temperature of 1,850° C. to crystallise, it is not subject to molecular changes; in consequence of its low expansion co-efficient and its dense texture, shapes made from it retain their form under very severe temperature conditions. In this respect it is distinguished from a series of other refractory materials, which contain constituents that may occur in allotropic forms, and whose products must be made less dense and more porous in order to allow for internal tension.

Carborundum stones, in consequence of their particular properties, are of considerable advantage in places where the escape of heat and vapours through cracks in the walls would seriously interfere with the operation of the process. Hence, it is esteemed for the construction of combustion chambers, furnace arches, etc.

Industrial Applications

Carbofrax is now employed extensively in the following constructions among others: (1) side walls, fire bridges, and combustion chambers in oil fired boiler furnaces; (2) flues, furnace arches, and chimney constructions of different kinds for porcelain furnaces fired with oil fuel; (3) combustion chambers, arches, vertical and muffle furnaces in the porcelain and enamelling industry; (4) hearths, supports and combustion chamber constructions, which in the ordinary way are brought to a high temperature very quickly; and (5) for parts of heat treating furnaces of many different kinds, etc.

Carborundum is also of great service in the porcelain-enamelling industry. By replacing clay muffles with carborundum muffles, the Carborundum Gesellschaft claim a fuel saving of from 20 to 75 per cent. For the manufacture of different kinds of muffle furnace and retorts, carborundum is now being used. But it must not be overlooked that carbofrax stone is not to be recommended for fire bridges and side wall constructions where it is to come into contact with coal containing appreciable iron impurity. Carborundum mortars and cements for furnace building and repairs are now to be obtained.

The Dextrose Industry in the United States

By Lionel K. Arnold

The writer of the following article dealing with the dextrose industry of the United States is on the staff of the Chemical Engineering Department of Iowa State College, Ames, Iowa, U.S.A. He has himself had considerable experience in the corn sugar and beet sugar industries, and the article is of special interest in that it presents the American point of view.

For many years chemists have attempted to produce white crystalline dextrose as an hydrolysis product of starch, but it has been only in the last two or three years that it has been marketed in commercial quantities to compete with cane and beet sugar. Several plants in the United States are now engaged in the manufacture of this sugar from corn starch. The Corn Products Refining Company have a plant at Argo, Illinois, which is equipped with 96 crystallisers, 80 centrifugal machines, 8 sugar dryers, and 16 Hummer screens. They also operate a smaller unit in another building, the two having a capacity of 600,000 pounds per day. The sugar is also being made by Penick and Ford, Cedar Rapids, Iowa; Clinton Corn Syrup Refining Co., Clinton, Iowa; and American Maize Products Co., Robey, Indiana.

Method of Manufacture

The process of manufacture is not radically new. The starch is produced in the usual manner from maize (or corn, as it is called in United States), being freed from nitrogenous material as much as possible by retabling and washing. One plant treats the starch with enzymes capable of rendering the insoluble proteins soluble and washes the latter out in the filter presses. The purified starch is pumped to the converters as a 12° Be. water suspension. For syrups and the cruder yellow sugars a heavier suspension is used. The converters are bronze pressure cookers such as are used for the production of glucose syrup and have a capacity of about 2,200 gallons. In these the starch is cooked with a small amount of hydrochloric acid at about 45 pounds pressure for thirty minutes. The resulting syrup is neutralised with soda ash and filtered to remove any solid matter. It is further filtered through bone char or vegetable carbon to decolorise it as much as possible, and then concentrated to 30° Be. in triple effect vacuum evaporators. It is again filtered through bone char and concentrated in sugar pans to 40° Be. It is then run into regular sugar crystallisers containing about one-third their capacity in massecuite from the former crystallisation as seed.

After three days of slow agitation and cooling the mass consists of a heavy massecuite of crystals and mother liquor, ready to be purged. The purging is carried out in standard sugar centrifugals in much the same manner as in the sucrose industry. After centrifuging out the greens the sugar is washed by automatic washers until white. It is dried in revolving sugar driers, any coarse material being screened out on vibrating screens. The product is packed in 100 pound bags similar to cane or beet sugar.

A second crystallisation may be made by boiling down the greens and crystallising for about two weeks. The sugar is purged as free as possible from greens without washing, remelted, and added together with the first sugar wash water to the first sugar liquor. Some plants make only the first crystallisation and run the greens into the yellow slab or chip sugar liquor. The yield of sugar, using two crystallisations, is about 25 pounds per bushel.

Some Economic Factors

The importance of this industry to the United States is far greater than it could be to Great Britain because of the immense amounts of the raw material produced in the former country. The yearly production of maize in the United States is approximately 2,500,000,000 to 3,000,000,000 bushels, of which less than five per cent. is used by the great starch and glucose industries of the country. During the last few years, owing to large production, the price of maize has been low. This, together with the decrease in the prices of farm land and products, has caused great dissatisfaction among the farmers, especially in the middle west "Corn Belt" states.

With the production of corn sugar the manufacturers began clever propaganda for its use by the farmers on the plea that this would increase the consumption and consequently the price of corn. This was eagerly seized upon by the business men, farm leaders, and politicians of the corn producing states as the salvation of the farmer. The result was that large quantities of corn sugar were sold. Recently, however, the sale for home use dropped off considerably owing largely to dissatisfaction as a result of attempts to substitute it indiscriminately for cane and beet sugar, from which it differs in some characteristics.

The commercial dextrose or refined corn sugar crystallises in hexagonal, flat, platelike crystals of hydrated dextrose which, being fairly soft, break up readily in drying and packing. This results in many broken grains and much fine material. Some anhydrous sugar may also be present due to driving off water of crystallisation in drying. It is only about 68 per cent. as sweet as cane sugar, which fact, together with its poorer appearance, has prevented its general use in the home. It is used extensively in the manufacture of bread, ice cream, chewing gum, pancake flour, and candy. It is especially suitable in ice cream as it gives the desired "body" without the excessive sweetness of sucrose. Its low sweetening power and high osmotic pressure make it desirable for use in condensed milk. It is said to bring out better the natural fruit flavours when used for canning fruit. It is not probable that it will replace sucrose entirely, but possibly it will be found adaptable to many special uses. The price follows that of the beet and cane sugar, the prices being about proportional to the sweetening power.

Ceramic Society's Forthcoming Meeting

The autumn meeting of the Refractory Materials Section of the Ceramic Society will be held at Leeds on September 9 and 10, Mr. Frank West, chairman of the section, presiding. The headquarters of the society will be the Queen's Hotel. On September 9, in the large Chemical Lecture Theatre of the University of Leeds, a general meeting will be held; papers will be read by Mr. W. J. Rees on "A Further Note on the Influence of Iron Oxide in Promoting the Inversion of Silica," by Mr. F. West and Mr. J. W. Fagan on "Practical Results in the Drying and Burning of Refractory Materials," and by Dr. G. Martin on "Refractory Linings for Cement Kilns." On the same day, members and guests will lunch at the Queen's Hotel as the guests of the Leeds Fireclay Co., Ltd., and a visit will be paid to the Burmantofts Works of the Leeds Fireclay Company, Ltd. If the works are not in operation owing to the coal dispute, motor cars will be provided for a visit to Ilkley and Bolton Abbey. On September 10, papers will be read by Professor J. W. Cobb, Dr. H. S. Houldsworth and Mr. J. F. L. Wood on "The Influence of Foreign Matter on the Thermal Expansion and Transformation of Silica"; Mr. W. T. Gardner on "Refractories in the Gas Industry"; Mr. H. M. Ridge on a "Note on Modern Clay-working Machinery as Used on the Continent"; and Mr. C. E. Moore, "Note on the Products Obtained by Heating Stourbridge Fireclay with Potassium Chloride."

Council's Tar "Ring" Complaint

In endeavouring to break down an alleged "ring" controlling the price of tar, the Stalybridge Town Council, with other bodies, is reported to have agreed, at a meeting, to trade with the North-Western Co-operative Distillers, Ltd. for the sale and purchase of tar. Councillor Greenwood said the company had erected a large plant at Cadishead. For a good many years the Corporation had sold their tar to firms dealing specially with the distillation of tar, and as time had gone on "rings" had been formed and the Corporation had had to accept such prices as the "rings" were prepared to pay. The North-Western Co. were taking the tar on a co-operative basis. They offered the Corporation not less than 10s. a ton more than they had been receiving, and any profits, after meeting the just demands of the firm, would be distributed on a co-operative basis. Corporations and private gas companies selling 2,000 tons of tar a year would be entitled to a seat on the Management Committee, and smaller companies and corporations could combine to qualify for representation.

"Converted Coal"

To the Editor of THE CHEMICAL AGE.

SIR,—The question of fuel is likely to remain at a high temperature for some time to come. It is a scandal that any country should allow so valuable an asset as coal to be used so wastefully. Out of every £1 spent on coal for the domestic grate 15s. worth is used to make a draught up the chimney, and to foul it and the outer air. In short, only 2 per cent. of the potential heat of the coal performs the function for which it is intended.

If we brought water to the big towns on tank trains and distributed it to the consumer in carts and buckets we should think our local government strangely inept. Or if our mothers and wives supplied us at breakfast with a plate of raw oats instead of porridge, or wheat in the grain instead of bread, we should smile at it as humorous satire on our mentality. But that sort of thing is exactly what is being done with fuel. Instead of energy in a clean, cheap, and easily applied form we have on our plates, so to speak, a raw material which our appliances cannot convert except with enormous waste and discomfort.

The only real difficulty with the conversion process of coal and steam into hydrogen is getting rid of the sulphur and ensuring the production of the carbon molecule as carbon-dioxide to the exclusion of carbon-monoxide. There should be catalysts that would make this, and so enormously increase the efficiency of a hydrogen-making plant.—Yours, etc.,

Chalfont St. Peter, August 12. E. W. VEALE.

German Dye Exports for 1925

GERMANY'S exportation of aniline and sulphur dyes, including a few unclassified colours in 1925, was appreciably lower than in 1924. Below are listed the leading importers of this group of dyestuffs and a comparison of their respective imports of the past two years :—

Country.	1925. (unit—100 kilos or 220 lb.)	1924.
India	22,516	19,617
Czechoslovakia	19,840	26,709
Russia	17,703	14,143
China	12,482	68,660
Netherlands	9,328	5,024
Japan	7,338	15,375
United States	6,817	2,422
Italy	5,868	4,987
Great Britain	5,819	3,697
Dutch East Indies	5,779	1,956
Austria	5,345	8,023
Switzerland	6,141	7,293
Other countries	48,670	42,385
Total	173,646	220,289

Fatal Accident at Tar Works

BEFORE the Coroner (Mr. I. Bradley) an inquest was held in Birmingham, on Wednesday, August 11, concerning an accident at the works of Robinson Brothers (Nechells), Ltd., tar distillers, Aston Church Road, following which Joseph Albert Carpenter (26), labourer, of 57, Aston Church Road, died. Evidence showed that while Carpenter was stoking a furnace back-firing occurred, and the man was so badly burned about the face, hands and knees that he died in Dudley Road Hospital a few days afterwards. Giving evidence, Ernest Lee, under whom the man worked, explained that in normal times coal was used to heat the furnaces, but owing to the difficulty in obtaining it a mixture of pitch and oil was used. He added that with coal he had never known a furnace to backfire. Mr. T. H. Ekins elicited from witness that although there was a greater accumulation of gases from the present fuel than with coal, the capacity of the flues had not been increased. Mr. Bennett, the works' chemist, said he could not account for the accident except through the generation of gases arising from the character of the fuel used. Mr. Carslake, for the firm, said the same method of heating the boilers had been employed during the war and at previous coal strikes; it was not an untried method. A verdict of "Accidental death" was returned.

British Association of Chemists

The Discussion on "Chemistry House"

ON Tuesday, July 20, Dr. Miall, of the Society of Chemical Industry, opened a discussion upon this subject at a meeting organised by the British Association of Chemists. This has already been reported in THE CHEMICAL AGE, but some general comments may not be amiss.

In the first place, it is not without hesitation that we venture to disagree with Mr. Woolcock, whose experience in this matter is very wide; but his remarks seemed to suggest that all chemical societies were in favour of the scheme of Chemistry House. There is, of course, no actual opposition to the idea, but had every society embraced it with enthusiasm, it seems probable that the £25,000 to £35,000 originally suggested by Dr. Armstrong would have been produced or guaranteed and something sufficiently definite done, if only in the manner of a small beginning. Not unnaturally, some of the older societies in particular might feel that a change of quarters entailed a sacrifice of tradition, and tradition must be given a hearing. These societies would have to be definitely assured, before lending their support, that a very real advantage would accrue by the housing of all societies under one roof.

It would be undesirable to make too much of this factor of passive resistance, but allusion to it has been made for the sake of its bearing upon the discussion. For its own part the Association would have found the meeting more stimulating if definite opposition had been raised to the scheme; as it was, the meeting appears to have agreed that a Chemistry House was desirable, but there was none sufficiently enthusiastic to come prepared with any concrete suggestion that might assist in furthering the scheme by even a little. From this Mr. Collett must be excepted, and it is unfortunate that his recommendation was not supported.

Professor Armstrong stated roundly that the meeting was entirely premature; and if it were possible to have a discussion without a meeting that statement could be accepted without qualification. There appears to have been an impression abroad that the meeting was convened for the purpose definitely of settling some point in connection with Chemistry House; that would, indeed, have been premature; but the contrary is, in fact, the case. For its own part the Association hoped that a representative of every society would have something to say either in support or opposition, so that it might be possible to gauge whether the time was ripe, even for the consideration of any concrete proposals.

On the other hand, the discussion should have useful results. It is the first discussion of the kind to take place, and this in itself registers an advance. Professor Armstrong made an excellent point when he said that no scheme which was not on a really large scale was worth considering. At the same time some plan could be evolved which would be capable of development so that the matter is not indefinitely delayed for want of sufficient funds to develop the whole structure at one blow. The good attendance at the meeting shows the interest which any scheme for a closer co-operation between societies of chemists excites. It was obvious that many individuals at least, if given a lead, would be ready to make real sacrifices if by such there was good reason to believe that the profession as a whole would benefit.

The discussion, then, despite its indefinite character, when considered from some points of view, has not been in vain. It has opened the door for further informal conversations at a later date. Chemistry House, though by no means yet a name to conjure with, has been brought to the notice of a large number who until now had probably given the matter nothing more than a passing thought. The discussion may well be a seed that will grow and flourish. R.

Bury Dyeworks Fire

EXTENSIVE damage, the amount of which is expected to involve several thousands of pounds, was caused by fire early on Thursday, August 12, at Reddisher Bleach Works, Holcombe Brook, near Bury, owned by C. Ainsworth and Sons, Ltd. A number of employees will be rendered partially idle, but the works would have been closed down during this week for the annual holidays. The fire is believed to have been caused by an electric wire fusing, and started in the drying-room, where there was some valuable machinery.

"Gasin": A Non-knocking Motor Fuel

German Claims in the Theory and Practice of Anti-knocks

In the issue of THE CHEMICAL AGE for May 1 reference was made to German statements in regard to the production of a new anti-knocking motor fuel, "Gasin." The *Chemiker Zeitung* for August 14 contains an article by Dr. G. Grote dealing in some detail with the matter. Information as to the composition of "Gasin" is still lacking.

In the German article all forms of knocking are grouped together under the heading "Detonation Knocking." It is pointed out that in the normal working of a motor the spark passes when the piston is about 7 mm. from the upper dead centre. The ignition of the fuel then occurs gradually, and not suddenly, so that in the interval between the ignition and the completed explosion the piston travels some millimetres further, being then driven back in the normal way. The combustion of the petrol-air mixture should be completed as soon as the piston reaches the dead centre. There are, however, fuels—such as petrol—which after ignition do not combust gradually, but explode suddenly—that is, the explosion of the whole of the petrol-air mixture is completed before the piston has reached the upper dead centre. Hence the piston meets with great resistance in reaching its dead centre, whereby it works jerkily, and an irregular, jerky action of the motor, giving rise to the sounds known as knocking, results. Up to now, states Dr. Grote, attempts have been made to obviate knocking by various anti-knocking agents—such as benzene, lead tetraethyl, iron carbonyl, etc.—which have been used on an empirical basis, without a real knowledge of the manner in which they operate. The producers of "Gasin" claim to have discovered that the true cause of "knocking" is different from that hitherto assumed, and that it is connected with the electrical conductivity of the fuel. They find that the knocking decreases as the conductivity increases, and that the knocking disappears when the conductivity is raised to its "highest limit."

New Theory of Knocking

The explanation which they offer is as follows: If the fuel used in the motor is a non-conductor—as, for example, petrol—it becomes electrically charged by friction as the mixture is sucked in. Tensions are thereby set up, which are increased by compression in the cylinder. As a result, on passage of the spark the explosion, owing to the electrical tension, occurs instantaneously, giving rise to knocking. If, on the other hand, the fuel is (by addition of some substance) rendered electrically conducting, electrical tensions cannot occur. Combustion of the fuel after ignition then occurs normally and gradually, without knocking. In this connection a comparison was made between petrol and benzene which was discussed in the note in THE CHEMICAL AGE for May 1. In the preparation of "Gasin" certain substances are used which give rise to the greatest electrical conductivity. At the same time, the use of these substances results, through splitting off of oxygen, in an increase of the explosive force of the fuel, and further in a refining action, whereby easily resinified substances and other impurities are removed from the fuel. "Gasin" is said to have been investigated by various authoritative institutions. Tests were first made on the electrical conductivity of various fuel mixtures. For this purpose insulated platinum electrodes were sealed into the motor; the circuit contained a battery of dry cells, a cut-out, resistances, and a sensitive galvanometer. By this means the electrical condition of the mixture could be measured. Among the results were the following:—Petrol, non-conducting, knocks strongly; a 50–50 mixture of petrol and benzene, slightly conducting, knocks; a 30–70 mixture of petrol and benzene shows strong conductivity and does not knock; "Gasin," a good conductor, does not knock. Pure petrol, which is a non-conductor, becomes electrically charged when sprayed in the cylinder, and knocking results. "Gasin," on the other hand, which is a conductor, does not become charged on spraying, and hence no knocking results from its use. In further tests the performance of "Gasin" was compared with the fuels "Stellin" and "Daponin," with which it compared very favourably, giving higher power and lower consumption. With it the motor did not knock, started well cold or hot, and ran smoothly and without knocking on full load at low speed, although no pre-heating of the mixture was done.

A New Cellular Concrete

EXPERIMENTS carried out by Mr. E. C. Bayer at the Polytechnic Academy laboratories at Copenhagen have produced a type of cellular concrete which, it is claimed, meets a demand for a substance which, as a light durable building material, is capable of being cut and planed, and also serves as an effective insulator. The cellular structure is obtained by producing a foam in the mixture of cement and sand. A mixture of soap and albumen to the extent of only one part to 2,000 of the concrete is used. The foam is usually prepared in a separate mixer, and then introduced into the concrete mixer by compressed air. A building material is thus obtained which has a specific gravity of from 0·1 to 1·0, according to the amount of foam produced. A concrete can therefore be produced which will float on water, and which, unlike brick, does not become waterlogged. While the product with a specific gravity of unity has a compressive strength of 1,000 lb. per square inch, the strength rapidly diminishes with decreased density. In addition to its insulating property, which makes for its effective application for lining either hot or cold spaces, it is said to exhibit a great degree of heat resistance. Blocks of the material after heating and immersing in water have been found to be uninjured where ordinary concrete blocks were badly damaged.

Separation of Chromium and Vanadium

THE following interesting method for separation of chromium and vanadium has been devised by Professor E. Deiss, Berlin: The oxide mixture of the metals is mixed with soda in a nickel or iron crucible covered with a perforated and tightly fitting lid through which illuminating gas is introduced into the crucible during the heating and cooling of the contents. The mixture is brought to a complete melt (10 to 15 minutes as a rule). After cooling, the melt is dissolved in water and the residue filtered off and washed with a 3 per cent. solution of sodium-carbonate. All the vanadium is now contained in the colourless filtrate and is determined by heating the filtrate acidified with sulphuric acid, with a slight excess of potassium permanganate, in order to oxidise all reducing substances present, reducing by the usual method with permanganate at a temperature of 60-80° C. The residue containing all the chromium is burned in the original crucible and fused with sodiu mperoxide. After dissolving the melt in water and filtering off the residue, the chromium contained in the pure chromate solution is determined by any one of the reliable methods known. This method of separation has proved to be very efficient for the analysis of alloys containing both chromium and vanadium.

A New Use for the Cement Gun

EXPERIMENTS with a view to the employment of the cement gun for the spreading of rock dust have recently been made in a colliery in New Mexico. Instead of a batch of concrete, the apparatus, stationed at the intake of the main entry, ejects a stream of fine, dry shale dust into a strong ventilating current. The tests indicate that the shale dust was discharged at the rate of a ton per hour. The velocity of the air current in one test was 800 to 1,000 linear feet per minute at the intake, and about 400 linear feet 6,000 feet distant. The dust cloud at this point was dense for a period of 25 minutes after the cement gun was started; and definite evidence of dust settlement was found as far as 9,000 feet from the gun. To get an even distribution of dust through an entry, it would be necessary to shift the dusting machine from time to time; and to obtain a deposit of, say, 4 lb. per linear foot in an entry 98 square feet in cross section and 6,000 feet long, it would be necessary to distribute a ton of dust per hour for 12 hours.

Chemistry at the Lister Institute

IN the annual report of the Lister Institute of Preventive Medicine it is stated that the biochemical department in the charge of Professor Harden has been continuing its work on hexosephosphates and alcoholic fermentation and on the concentration and possible isolation of vitamines; Dr. Zilva is supervising the preparation of large supplies of concentrated lemon juice for the Antarctic whaling expedition; Dr. Robison is following up his important discoveries of the phosphoric esters in blood and tissues and their hydrolysis by specific enzymes.

From Week to Week

THE NORTH OF ENGLAND INSTITUTE of Mining and Metallurgical Engineers is holding its annual general meeting to-day, at Newcastle-upon-Tyne.

JOHN WALSH, aged 50, a chemical labourer, of 16, St. Paul Street, Huddersfield, collapsed on Friday, August 13, in the street and died almost at once.

R. W. GREEFF AND CO., INC., of New York, have disposed of their offices at 78, Front Street, New York City, to the American Bureau of Shipping, but will continue in use of the premises until March of next year.

THE NORWEGIAN ELECTRO-CHEMICAL INDUSTRY is now threatened with a similar suspension of activities to that which has occurred in the paper industry, and unless favourable developments occur, a stoppage is to start to-day (Saturday).

THE WORSHIPFUL COMPANY OF DYERS of the City of London have intimated their intention of offering their medal for the best paper published in the journal of the Society of Dyers and Colourists during the period July, 1926, to June, 1927.

THE VALUE OF BASIC SLAG for the improvement of pasture land has been proved by experiments at Cockle Park and other places throughout the country, states Professor Gilchrist, of the Agricultural Department of Armstrong College, Newcastle.

MR. H. SUTCLIFFE SMITH, Chairman of the Colour Users' Association, a member of the Executive Committee of the Bradford Dyers' Association, and a former president of the Bradford Chamber of Commerce, will shortly take up his residence at Ingerthorpe Grange, Markington, Ripley.

THE ALUMINIUM CO. OF AMERICA are reported to be commencing production at the new Saguenay River plant next month. The initial output will be small, but contemplated developments include power facilities, a complete city for employees and extensive plants for production on a large scale.

AN EXPLOSION at the powder manufacturing plant of Manfred Weiss on Csepel Island, Budapest, has caused widespread damage to property and injury to persons in the vicinity. It is believed that spontaneous combustion originating in one of the subterranean powder magazines may have been the cause of the explosion.

THE UNEMPLOYMENT SUB-COMMITTEE of the Cabinet is reported to be considering the possibility of stimulating the production of shale oil in the United Kingdom. Apart from the obvious value of a home source of oil supply, it is thought that a British industry would provide employment for miners for whom no work can be found in the pits.

THE DEVELOPMENT IN THE COTTON SEED EXPORT TRADE is worthy of note, states the report on the Maritime Trade of the province of Sind for the official year 1925-26. During the year there was a keen demand from the United Kingdom and shipments reached the high figure of 71,621 tons, valued at Rs. 82·04 lakhs, showing an increase of 108 per cent. in quantity and 106 per cent. in value as compared with the previous year.

THE WESTINGHOUSE ELECTRIC AND MANUFACTURING CO. is to build a five-story steel structure, as an addition to its transformer factory at Sharon, Pennsylvania, U.S.A. There will not be a single rivet or bolt in the new building, as all the joints are to be arc-welded. The contract has been given to the American Bridge Company. According to Mr. W. S. Rugg, Vice-President of the Westinghouse Company, the building will be the first multi-structure in the world to be erected by means of the new arc-welding process. It is expected that the cost of the welded joints will be from 10 to 25 per cent. less than riveted joints, as arc-welding is a one-man job, whereas riveting requires four men.

APPLICATIONS ARE INVITED for the following appointments: Full-time teachers in the Chemistry Department of the Northern Polytechnic. Burnham Scale. The Clerk to the Governors, Northern Polytechnic, Holloway, London, N.7. September 6.—Junior Assistant for the Directorate of Metallurgical Research, Research Dept., Woolwich, to undertake work mainly in connection with technical records, reports and literature; knowledge of French and German required. Initial salary, £258 8s. (men) and £231 (women). Chief Superintendent, Research Department, Woolwich, London, S.E.18.—Research Bio-chemist in the Walter and Eliza Hall Institute of Research, Melbourne, Australia. Two years. £750. Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London, W.C.2. September 30.

BALDWINS, LTD., deny the rumour that a German syndicate intends purchasing the Mannesman Tube Works, at Swansea.

THE MARRIAGE TOOK PLACE this week at Skewen, of Mr. Emyr Evans-Jones, B.Sc., of the National Oil Refineries chemical staff, to Miss Mildred Jenkins, of Neath.

SIR EDWARD BROTHERTON, head of Brotherton and Co., Ltd., chemical manufacturers, Leeds, is one of seven well-known citizens whom it is proposed to elect Freemen of the City.

SIR ALFRED MOND has returned from a business trip to the Continent, and leaves to-day, Saturday, in the *Empress of France* on a similar visit to North America. He is expected to be away for some time.

TWO GATESHEAD MINERS, James John Kelly (23) and John Frederick Kane (26), were sent to prison for four months by the Gateshead Borough magistrates for stealing lead valued at £59 from the United Alkali Company.

RECENT WILLS INCLUDE:—Mr. Philip Lyttleton Gell, J.P., M.A., of Kirk Langley, Derbyshire, late president of the British South Africa Company, chairman of the Huelva Copper and Sulphur Mines, and a director of the Zinc Corporation and other companies, £38,372.

MR. GEPP, the chairman of the new Australian Migration and Development Board, will accompany Mr. Bruce, the Commonwealth Premier, to London to arrange for co-operation between the Council for Scientific and Industrial Research and the similar organisation in Australia.

THE BRITISH ENGINEERING STANDARDS ASSOCIATION has just published a revision of the specification for Portland Blastfurnace Cement, which was first brought out in 1923. The modifications follow the same lines as those introduced into the specification for Portland cement issued last year.

IN CONNECTION WITH ITS JUBILEE, which is to be celebrated next month, the American Chemical Society will issue a volume surveying the development of chemistry in the United States during the past fifty years. The work is in charge of Dr. C. A. Browne, chief of the U.S. Bureau of Chemistry, Washington.

THE REPORT ON THE MARITIME TRADE OF THE PROVINCE OF SIND for the official year 1925-26 states that the value of manures advanced by Rs. 8·55 lakhs to Rs. 33·29 lakhs, shipments chiefly comprising animal bones and bonemeal. The former was taken in larger quantities by Belgium and Germany and the latter by Ceylon and the United States of America.

THE GERMAN STEEL TRUST intends to close down, probably on September 1, the Holstein A.G. iron works in Rendsburg, incorporated in the concern when the property of the Rombacher Hüttenwerke was absorbed in the Trust. This is part of the rationalising process, and the 500 or so employees at the Holstein works will, as far as possible, be absorbed in the Trust's other undertakings.

THE UNITED ALKALI CO., LTD., of Newcastle-on-Tyne, announce that as from August 14 their offices are transferred from the present address (Pandon Buildings, City Road, Newcastle-on-Tyne) to a new building at their Allhusen works, Gateshead-on-Tyne. Their postal address on and from the above date will be P.O. Box No. 1, Gateshead-on-Tyne, and a request is made that all correspondence should be addressed accordingly. The telegraphic address will be: "Ubique, Gateshead-on-Tyne," and the telephone number "1001 Gateshead" (4 lines).

"CONTINENTAL METALLURGICAL AND CHEMICAL ENGINEERING" is the title of a new monthly journal, published in Berlin, the purpose of which is to note and describe the advances made in these fields throughout all continental countries. It is printed in good English, and its contents, particularly on the metallurgical side, cover a wide range of interests. A special feature is the monthly review of European iron and steel markets. The publishers are the Dr. Joachim Stern Verlag, the managing editor Dr. Joachim Stern, and the editor Mr. Edmund R. Thews.

THE DETROIT AIRCRAFT DEVELOPMENT CO. has been awarded a contract by the U.S. Navy Department for the construction of the world's first all-metal airship, at a cost of £60,000. The length is to be 150 ft., and the width 50 ft. There is to be a single cell "bag" made of duralumin. Provision is to be made for a crew of four and eight passengers. The metal covering, it is claimed, will permit the safe use of hydrogen gas. The Detroit Aircraft Development Company, in which Edsel Ford, the son of Henry Ford, is interested, was the sole bidder.

References to Current Literature

British

CATALYSIS.—The catalytic decomposition of solutions of sodium hypochlorite by finely divided metallic oxides. E. Chirnoaga. *Chem. Soc. Trans.*, July, 1926, pp. 1693-1703.

The catalytic decomposition of nitric oxide at the surface of platinum. T. E. Green and C. N. Hinshelwood. *Chem. Soc. Trans.*, July, 1926, pp. 1709-1713.

CLAY.—Some notes on China Clay. E. J. Lewis. *Ind. Chem.*, July, 1926, pp. 307-308.

FERMENTATION.—Fermentation in the baking industries. Part II. D. Ellis. *Ind. Chem.*, July, 1926, pp. 322-325.

FUEL.—Experiences with alcohol motor fuels. J. D. Ross and W. R. Ormandy. *J.S.C.I.*, August 13, 1926, pp. 273-280 T.

GENERAL.—Resistant steels for chemical engineering. W. H. Hatfield. *J.S.C.I.*, August 13, 1926, pp. 568-573.

Chemically resistant steels—with special reference to very high and very low temperatures. T. G. Elliot and G. B. Willey. *J.S.C.I.*, July 30, 1926, pp. 526-534.

Surface combustion and its influences on the future economics of heat and power. T. G. Tulloch. *J.S.C.I.*, August 13, 1926, pp. 280-287 T.

GLYCOLS.—The occurrence, properties, and uses of trimethylene glycol, and the fermentation of glycerin lyes. Part II. A. Rayner. *J.S.C.I.*, August 13, 1926, pp. 287-288 T.

HYDRIDES.—Copper hydride and its crystal structure. H. Müller and A. J. Bradley. *Chem. Soc. Trans.*, July, 1926, pp. 1669-1673.

ORGANO-METALLIC COMPOUNDS.—Synthesis of iodine compounds of the salvarsan group. A. D. Macallum. *Chem. Soc. Trans.*, July, 1926, pp. 1645-1647.

Mercuration of *o*-nitrotoluene. H. Burton, F. Hammond and J. Kenner. *Chem. Soc. Trans.*, July, 1926, pp. 1802-1804.

SUGAR.—Sugar from wood. W. R. Ormandy. *J.S.C.I.*, August 13, 1926, pp. 267-273 T.

The constitution of sucrose. Parts I and II. G. McOwan. *Chem. Soc. Trans.*, July, 1926, pp. 1737-1750.

SULPHATES.—A study of the basic copper sulphates. G. Fowles. *Chem. Soc. Trans.*, July, 1926, pp. 1845-1858.

WASTE RECOVERY.—The recovery and use of waste materials. Part V. City and urban wastes. J. B. C. Kershaw. *Ind. Chem.*, July, 1926, pp. 309-314.

United States

ACIDS.—The nature of stannic acids. E. Posnjak. *J. Phys. Chem.*, August, 1926, pp. 1073-1077.

AMMONIA.—Absorption and desorption of ammonia in a coke-packed column. T. K. Sherwood and A. J. Kilgore. *J. Ind. Eng. Chem.*, July, 1926, pp. 744-746.

ANALYSIS.—Free chlorine in air. A colorimetric method for its estimation. L. E. Porter. *J. Ind. Eng. Chem.*, July, 1926, pp. 730-731.

The determination of biguanide. C. D. Garby. *J. Ind. Eng. Chem.*, August, 1926, p. 819.

The determination of moisture in tannery materials. I. D. Clarke. *J. Soc. Amer. Leather Chem. Assoc.*, August, 1926, pp. 385-399.

Iodometric determination of the halogens. P. L. Hibbard. *J. Ind. Eng. Chem.*, August, 1926, pp. 836-838.

LEATHER.—The properties of shoe leather. J. A. Wilson and E. J. Kern. *J. Soc. Amer. Leather Chem. Assoc.*; Part V, July, 1926, pp. 351-357; Part VI, August, 1926, pp. 399-403.

Micro-tannology. G. D. McLaughlin and F. O'Flaherty. *J. Soc. Amer. Leather Chem. Assoc.*, July, 1926, pp. 338-351.

OILS.—Distribution of sulphur in oil shale. E. P. Harding and W. Thordarson. *J. Ind. Eng. Chem.*, July, 1926, pp. 731-733.

The cracking of petroleum oils. E. H. Leslie and E. H. Potthoff. *J. Ind. Eng. Chem.*, August, 1926, pp. 776-785.

RUBBER.—Furfural derivatives as rubber accelerators. J. P. Trickey and G. J. Leuck. *J. Ind. Eng. Chem.*, August, 1926, pp. 812-813.

SILICATES.—Aqueous solutions of sodium silicates. Part IV. R. W. Harman. *J. Phys. Chem.*, August, 1926, pp. 1100-1111.

SUGAR.—Influence of absorption spectra of technical sugar products on the decolorising efficiency of bone char. T. B. Wayne. *J. Ind. Eng. Chem.*, August, 1926, pp. 847-854.

Purification of diffusion juice from beets. H. Schreiber. *J. Ind. Eng. Chem.*, August, 1926, pp. 860-864.

VITAMINS.—Destruction of vitamin A in milk by ultraviolet light. R. W. Titus, J. S. Hughes, W. R. Hinshaw and J. B. Fitch. *J. Ind. Eng. Chem.*, August, 1926, p. 843.

French

ACIDS.—Evolution of the manufacture of sulphuric aid by the lead chamber process in recent years. Part XX. De Jussieu. *L'Ind. Chim.*, July, 1926, pp. 290-296.

ADSORPTION.—Experimental investigations on the adsorption of dissolved substances. Part I. A. Charriou. *J. Chim. Phys.*, July, 1926, pp. 621-647.

The estimation of the adsorptive power of charcoal. M. Surun. *Compt. rend.*, July 5, 1926, pp. 44-46.

Adsorptive properties of cellulosic compounds. J. Duclaux. *Rev. gén. Colloides*, May, 1926, pp. 137-142.

ANALYSIS.—Quantitative analysis by X-rays. M. Delauney. *Bull. Soc. Chim.*, June, 1926, pp. 805-819.

Estimation of lactic acid in wine. G. Bonifazi. *Ann. Chim. Analyt.*, July, 1926, pp. 193-196.

A new colorimetric method for estimating nickel. A. P. Rollet. *Compt. rend.*, July 9, 1926, pp. 212-213.

DIFFUSION.—The diffusion of solids. P. Henry. *Bull. Soc. Chim.*, June, 1926, pp. 836-841.

ESTERS.—Study of the esterification of cyclohexanol and some of its homologues. G. Cauquil. *J. Chim. Phys.*, July, 1926, pp. 586-608.

Soluble cellulose esters of the higher fatty acids. H. Gault and P. Ehrmann. *Bull. Soc. Chim.*, June, 1926, pp. 873-883.

HYDROCARBONS.—Extraction of non-condensible hydrocarbons from the carbonisation gases of coal, etc. *L'Ind. Chim.*, July, 1926, pp. 305-308.

Synthesis of allenic hydrocarbons. M. Bouis. *Compt. rend.*, July 12, 1926, pp. 133-134.

The heats of combustion of some hydrocarbons. D. P. Konovalov. *Compt. rend.*, July 5, 1926, pp. 40-41.

OPTICALLY ACTIVE COMPOUNDS.—Optical rotatory dispersion. M. Lowry. *J. Chim. Phys.*, July, 1926, pp. 565-585.

The rotatory power of tartaric acid. R. Lucas. *Compt. rend.*, July 5, 1926, pp. 29-31.

PIGMENTS.—The uses of white pigments. *Rev. Prod. Chim.*, Part I, July 15, 1926, pp. 433-437; Part II, July 31, 1926, pp. 469-471.

REACTIONS.—Investigation of the thermal decomposition of nitrous and nitric oxides. E. Briner, C. Meiner and A. Rothen. *J. Chim. Phys.*, July, 1926, pp. 609-620.

Condensation of malonic esters with acetylacetic esters. Part I. H. Gault and L. Klees. *Bull. Soc. Chim.*, June, 1926, pp. 883-905.

The action of salt solutions on ferrous metals. R. Girard. *Compt. rend.*, July 19, 1926, pp. 213-214.

STEREO-CHEMISTRY.—Steric hindrance and cis-trans isomerism. Part II. Comparative study of borneol, isoborneol and their esters. G. Vavon and P. Peignier. *Bull. Soc. Chim.*, June, 1926, pp. 924-942.

Stereochemical investigations in the styrolene series: the *w*-ethoxystyrolenes. C. Dufraisse and R. Chaux. *Bull. Soc. Chim.*, June, 1926, pp. 905-922.

STRUCTURE.—X-rays and long-chain organic compounds. Spectrographic investigation of their structure and orientation. M. Trillat. *Ann. Phys.*, July-August, 1926, pp. 5-101.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

254,887. Stable Pigment Colours, Production of. W. Eberlein and Colloisil Colour Co., Ltd., Bents Lane, Bredbury, near Stockport, Cheshire. Application dates, January 16 and April 30, 1925.

It is known that pigment colours are more stable if they are precipitated in the presence of stable materials instead of in the pure condition, and it has been found that stable inorganic pigment colours are obtained by precipitating the pigment from the metallic salt with an inorganic substance, one or both of these being previously mixed with an organic or inorganic emulsion, colloidal solution, or colloidal suspension. Colloids such as water glass, silicic acid gel or silicic acid sol, resin soap, gum, or glue may be used, and also all natural and artificial fixing earths which are capable of absorbing and fixing basic dyestuffs without the addition of precipitating agents. The pigment obtained with the aid of a fixing earth is capable of binding or fixing basic dyestuffs. In an example, white colloidal fixing clay such as Bentonite is made into a suspension with water, and precipitated at boiling point with lead acetate solution. The precipitate is mixed with sodium bichromate solution, yielding a yellow pigment. Other examples are also given.

255,127. Organic Compounds, Manufacture of. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, March 12, 1925.

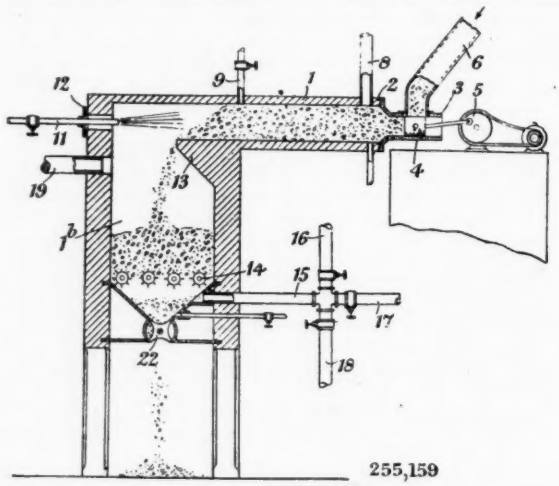
It has been found that reducible organic compounds containing at least two carbon atoms may be converted into more valuable products by treating with hydrogen at 250°-600° C. and 50 atmospheres pressure, in the presence of metal oxides which are not substantially reduced to metals under these conditions. Preferably a mixture is used of oxides of metals from different groups of the periodic system, preferably mixtures of zinc oxide with an oxide of another group of the periodic system. Oxides of heavy metals having more than one degree of oxidation are suitable. The oxides must be free of catalytically active metals or metals of the iron and platinum groups. Oxides of bismuth, cadmium, lead, antimony, etc., are not reduced in the presence of a large proportion of non-reducible oxides and may therefore be used. Suitable oxide mixtures are zinc oxide-chromium oxide, zinc oxide-manganese oxide, bismuth oxide-chromium oxide, lead oxide-uranium oxide, potassium hydroxide-zinc oxide-chromium oxide, and alumina-zinc oxide. Hydrocarbons such as olefines or gases containing them, such as natural gas, coal gas, or low-temperature carbonisation gas, are converted into products resembling gasoline. If a mixture of hydrogen and carbon monoxide is used, aromatic compounds may be converted into hydrocarbons of a higher order. Examples are given showing the production of liquid hydrocarbons boiling at 30°-80° C. from a mixture of ethylene hydrogen, methane, and nitrogen, toluene from meta-cresol and hydrogen, and others.

255,167. Barium Sulphide, Manufacture of. G. Richardson, 102, West 85th Street, New York. Application date, April 20, 1925.

In the manufacture of barium sulphide from barytes, it is found that the furnace gases and atmospheric nitrogen react with the barium sulphide to form sulphites, cyanides, and sulpho-cyanides. These compounds are a disadvantage when the barium sulphide is used for the manufacture of lithopone, since they tend to cause a darkening of the paints produced from lithopone. In this invention, barium sulphate is ground to 100 mesh and mixed with finely divided carbon free from nitrogen. The mixture is formed into large briquettes of cylindrical form with an axial aperture to permit more rapid heating and escape of gas. The cylinders are dried and heated to redness in retorts out of contact with air, or in electric furnaces just large enough to receive a single cylinder. The briquette is heated to about 1,800° F. and is then removed and cooled out of contact with air. The product is dissolved in water, filtered, and treated with zinc sulphate solution to obtain lithopone.

255,159. Cracking and Hydrogenation of Hydrocarbon Oils. G. W. Wallace, 1340, Mission Street, San Francisco, Cal., U.S.A. Application date, April 17, 1925.

The cracking apparatus consists of a horizontal chamber (1) and a vertical chamber (1^b). Pieces of carbon, carborundum, or carbon briquettes or other material, which may be treated



255,159

with catalytic substances, are fed through a pipe (6) and moved forward intermittently by a reciprocating piston (4), or continuously by a screw conveyor. The oil to be treated is injected through a pipe (11), mounted in a perforated member (12) which allows the admission of air for partial combustion of the oil. Alternatively, the oil may be admitted through a pipe (9). The chamber (1^b) is provided with rotary crushers (14) to break up the contact material, which is then discharged through a valve (22). The material supplied at (6) may be mechanically agitated, and part of the cracked products deposited on it. Gas, air, or steam may be admitted through the pipe (15) from the supply pipes (16), (17), (18). Any excess of gas is withdrawn through the pipe (19), and the cracked products are withdrawn at (8).

255,220. Diarylguanidines, Manufacture of. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, C. J. T. Cronshaw and W. J. S. Naunton, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, July 4, 1925.

In the reaction between aniline and its homologues and cyanogen chloride or bromide to obtain diarylguanidines, the conditions have been discovered under which the reactions may be effected on a large scale without danger. The mixture of cyanogen chloride and water is strongly agitated, and aniline or the like run slowly into it until the formation of the insoluble cyan-anilide is complete. The temperature is then raised to 90° C., yielding a solution of diphenylguanidine hydrochloride. This solution is run into hot caustic soda to obtain diphenylguanidine. Cyanogen bromide may alternatively be used. It may be produced and treated with aniline in the same vessel. In this case bromine is covered with water, cooled to a low temperature, and the theoretical quantity of sodium or potassium cyanide run slowly into it while stirring. Aniline is then added as above.

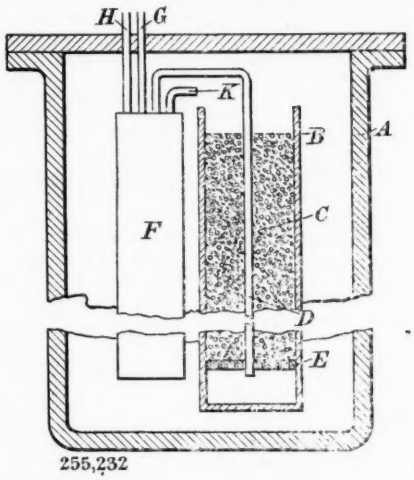
255,232. Catalytic Processes and Apparatus for Reactions Between Gases. Synthetic Ammonia and Nitrates, Ltd., and F. H. Bramwell, Billingham, Stockton-on-Tees, Durham. Application date, July 17, 1925.

In apparatus suitable for the synthesis of ammonia, the gases flow downwards through a single mass of catalyst, and then upwards through a narrow tube embedded in it. Gas passes through a tube (H) into a heat interchanger (F), and

(*Continued on page* 185)

(*Continued from page* 184)

then through pipe (K) to the casing (A). The gas then passes downwards through the catalyst (C) which rests on a grid (E), and then upwards through the pipe (D) into the heat interchanger (F), and thence to the outlet (G). This apparatus dispenses with welded connections between the heat interchanger



255,232

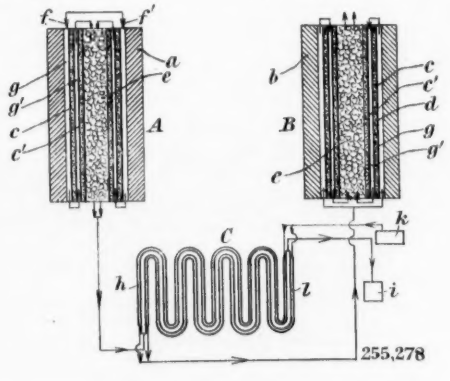
and the catalyst container. Further, the gases are not liable to short circuit the catalyst through leakage. Compare Specifications Nos. 241,817 and 248,999 (see THE CHEMICAL AGE, Vol. XIII, p. 559, and Vol. XIV, p. 385).

255,277. CONDENSATION PRODUCTS AND DYESTUFFS OF THE BENZANTHRONE SERIES, MANUFACTURE OF. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, October 7, 1925.

Vat dyestuffs of the isodibenzanthrone series and new intermediate products are obtained by condensation with the aid of alkaline condensing agents of mixtures of Bz1-halogen-benzanthrone and benzanthrone itself or such derivatives as possess a Bz1-position. This method is cheaper than the known method, since only part of the benzanthrone is halogenated, and a higher and purer product is obtained. The condensing agent may be a mixture of caustic alkali and alkali metal alcoholate, with an inert diluent. The reaction is effected in an inert gas. The benzanthrone and Bz1-halogen-benzanthrone must contain the 2-position unsubstituted. If the condensation is effected under more moderate conditions, a 2Bz1-dibenzanthronyl body is formed. The intermediate products can be transformed into vat dyestuffs in a separate operation by further condensation with an alkaline or acid-condensing agent. A number of examples are given.

255,278. CATALYTIC SYNTHESIS OF AMMONIA. S. G. S. Dicker, London. From H. Harter, 8, Theresienstrasse, Wurzburg, Germany. Application date, October 7, 1925. Addition to 241,771.

Specification No. 241,771 (see THE CHEMICAL AGE, Vol. XIII, p. 558) describes the catalytic synthesis of ammonia



255,278

by combined high pressure and low pressure methods, and in the present apparatus the heat is transmitted by radiation from a high pressure system to a low pressure system. The high pressure apparatus (A) consists of an outer casing (*a*) containing two double walled heat insulating cylinders (*c*), (c^1), each packed with insulating material. The central space (*e*) is packed with the catalyst. The low pressure apparatus (B) is of similar construction. The gas mixture enters at (*f*), (f^1), passes through the annular spaces (*g*), (g^1), and then through the catalyst. Hot ammoniacal gas then passes through the inner tube (*h*) of the heat interchanger (C), and finally to the condenser (*i*). The low pressure mixture from the compressor (*k*) passes through the outer tube (*l*) of the heat interchanger (C), where it is heated by the high pressure gas, and then passes through the annular spaces (*g*), (g^1), and catalyst (*e*) of the low pressure apparatus (B). The use of the heat insulating cylinders keeps the temperature of the outer casing cylinders down to 300°-400° C., and thus avoids the action of hydrogen on the metal. A modified apparatus is described in which the high pressure apparatus is arranged concentrically within the low pressure apparatus.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—228,157 (Consortium für Elektrochemische Industrie Ges.), relating to resinous or cuprene-like condensation and polymerisation products of acetylene, see Vol. XII, p. 315 ; 232,266 (H. Pereira), relating to halogenation of perylene, see Vol. XII, p. 641 ;2 38,241 (Bamag-Meguin Akt.-Ges.), relating to concentration of ores, see Vol. XIII, p. 39 (Metallurgical Section) ; 240,435 (L. G. Patrouilleau and Soc. Anon. Alumine et Derives), relating to alumina and aluminium sulphate, see Vol. XIII, p. 581 ; 242,958 (T. R. Haglund), relating to electrolytic production of aluminium and aluminium alloys, see Vol. XIV, p. 15 (Metallurgical Section) ; 247,986 (I. G. Farbenindustrie Akt.-Ges.), relating to complex antimony compounds, see Vol. XIV, p. 444.

International Specifications not yet Accepted

253,094. UREA-FORMALDEHYDE CONDENSATION PRODUCTS. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, June 5, 1925.

Clear condensation products are made by condensing one molecular part of urea to two of formaldehyde in the presence of active carbon, with or without a retarding agent such as an alcohol, ketone, or ester. Thus urea and formaldehyde at ordinary temperature with animal charcoal yield dimethylol urea. The product when refluxed and then evaporated in vacuo yields a clear syrup soluble in water and alcohol. Further heating renders the product insoluble in alcohol and then in both water and alcohol, and a clear solid is finally obtained. The products are useful as lacquers, varnishes, plastic materials, etc.

253,114. DRYING AGENTS. Deutsche Gasglühlicht-Auer-Ges., 11, Ehrenbergstrasse, Berlin. International Convention date, June 8, 1925.

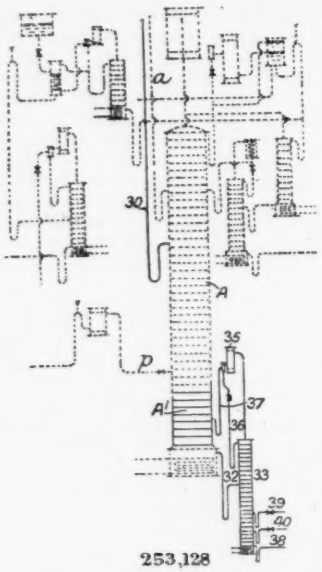
Gases are dried by means of phosphorus pentoxide deposited on pumice which has been impregnated with metaphosphoric acid.

253,118. SULPHONIC ACIDS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, and Brüning, Hoechst-on-Main, Germany.) International Convention date, June 2, 1925.

An aromatic hydrocarbon is treated with ethyl or methyl alcohol or a mixture of these and an aliphatic alcohol of high molecular weight or an aromatic or hydro-aromatic alcohol in the presence of chlorosulphonic acid or oleum. The substituted aromatic sulphonic acids are then condensed with an aliphatic, aromatic, or hydro-aromatic alcohol or with a compound having halogen capable of being exchanged such as an arylalkyl halide. Examples are given of the treatment of ethyl alcohol and naphthalene or toluene ; methyl-naphthalene and ethyl alcohol ; naphthalene, ethyl alcohol and isopropyl alcohol ; naphthalene and methyl alcohol, the product being treated with *n*-butyl alcohol ; naphthalene and methyl alcohol, the product being treated with benzyl chloride ; naphthalene and ethyl alcohol, the product being treated with hexahydraphenol and benzyl chloride.

253,128. DISTILLING ALCOHOL. Distilleries des Deux Sèvres, Melle, Deux Sèvres, France. International Convention date, June 4, 1925.

This apparatus is for distilling alcohol in the presence of a liquid which yields an azeotropic mixture, provision being



253,128

made to separate higher boiling impurities. Extra plates (A^1) are added at the base of the column (A), the dehydrated alcohol being drawn off at (*p*). The liquid drawn off at (32) passes to an auxiliary column (33) and the vapour passes to a condenser (35), the liquid partly returning by a pipe (36) to the column (33) and partly by a pipe (37) to the plates (A^1). Higher alcohols, acetal, aldol, croton aldehyde, furfurolic bases, amines, aldehydes, etc., are drawn off at (38), (39), (40). The aqueous alcohol is supplied by a pipe (*a*) and caustic soda solution by a pipe (30).

LATEST NOTIFICATIONS.

256,573. Process of plating with chromium. Chromium Products Corporation. August 7, 1925.

256,587. Process for the manufacture of lactic-acid esters. Chemische Fabrik auf Actien (vorm. E. Schering). August 7, 1925.

256,601. Processes for the extraction of lead and zinc from ores and metallurgical products. Krupp Grusonwerk Akt.-Ges., F. August 8, 1925.

256,610. Process and apparatus for the electrolytic production of metals. Jessup, A. C. August 5, 1925.

256,622. Manufacture of fusible cement and gases containing phosphorus. Kyber, W. August 4, 1925.

256,631. Production of hydrogen for the working of engines. Nouvelle, A. August 5, 1925.

256,634. Processes of treating tin-containing ores and metallurgical products. Krupp Grusonwerk Akt-Ges., F. August 7, 1925.

256,638. Manufacture of sulphur. Still, C. [Firm of]. August 6, 1925.

256,640. Bituminous and like compositions. Prodorite, Ltd. August 6, 1925.

256,643. Processes for the purification of waste gases. Krupp Grusonwerk Akt-Ges., F. August 7, 1925.

256,650. Disinfectants. I. G. Farbenindustrie Akt-Ges. August 10, 1925.

Specifications Accepted with Date of Application

243,739. Sulphur dyestuffs. Soc. of Chemical Industry in Basle. November 28, 1924. Addition to 199,360.

247,940. Sulphonic acids and the salts thereof, Manufacture of, from mineral oils. P. I. Schestakoff. February 17, 1925.

254,673. Steel, Manufacture of. E. Bosshardt. July 4, 1925.

255,919. Distillation of tar and the like. W. B. Davidson, A. C. Michie, and E. W. Muddieman. April 1, 1925.

255,961. Copper ores, Heat treatment and concentration of. J. C. Moulden, B. Taplin, and Metals Production, Ltd. May 2, 1925.

255,963. Carrying-out exothermic gaseous catalytic reactions. Synthetic Ammonia and Nitrates, Ltd., and H. A. Humphrey. May 4, 1925.

255,964. Carrying-out exothermic gaseous catalytic reactions. Synthetic Ammonia and Nitrates, Ltd., and R. E. Slade. May 4, 1925.

255,971. Arsenphenyl amine alcohols, Process for making. E. C. R. Marks. (*Abbott Laboratories.*) May 6, 1925.

256,059. Intermediates of the benzanthrone series, Manufacture and production of. J. Y. Johnson. (*Badische Anilin and Soda Fabrik and Farbwerke vorm. Meister, Lucius, and Brüning.*) August 14, 1925.

256,068. Hydroxychloranthraquinone, Manufacture and production of. H. Dodd, W. C. Sprent, and United Alkali Co., Ltd. August 27, 1925.

256,080. Sulphur burners. E. C. R. Marks. (*Grasselli Chemical Co.*) September 29, 1925.

256,094. Reducing solid bodies to an extremely fine state of division, Method of and apparatus for, and for the preparation of colloidal solutions. S. G. S. Dicker. (*Oderberger Chemische Werke Akt.-Ges.*) October 30, 1925.

256,137. Di-ammonium phosphate, Manufacture and production of. J. Y. Johnson. (*I. G. Farbenindustrie Akt.-Ges.*) February 22, 1926.

Applications for Patents

Allgemeine Ges. für Chemische Industrie. Treatment of hydrocarbons. 19,831. August 11. (Germany, September 26, 1925.)

Askenasy, P., Crowley, J. F., Hornung, G., and Rose, R. Production of hydrogen peroxide. 20,007. August 13.

Baume, G., Boutier, D., and Chambige, P. Manufacture of pitch, etc., emulsions. 19,644. August 9. (France, December 8, 1925.)

Bollmann, H. Purification of phosphatides. 19,633. August 9. (Germany, October 6, 1925.)

British Alizarine Co., Ltd., Dawson, W. H., and Soutar, C. W. Manufacture of nitro-acridine derivatives. 20,090. August 14. (May 27.)

British Colloids, Ltd., and Ward, J. F. Process for stabilising colloidal suspensions. 19,631. August 9.

British Synthetics, Ltd., and Higgins, E. B. Derivatives for dyeing fabrics, etc. 19,960. August 12.

Brookman, R. T. Colour lakes, etc. 19,632. August 9.

Canadian Electro Products Co., Ltd. Manufacture of hydroxy acid esters. 19,782. August 11. (Canada, September 3, 1925.)

Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of hollow bodies from quartz, etc. 19,924. August 12.

Crist, D. M. Process of metallising ores, etc. 19,716. August 10.

Deutsche Gasglühlicht Auer-Ges. Method of producing titanic acid. 20,019. August 13. (Germany, August 20, 1925.)

Drukker, M. Demonstrating chemical reactions. 19,884. August 12. (Germany, August 12, 1925.)

Goldschmidt Akt.-Ges., T. Utilisation of scrap metal. 19,647. August 9. (Germany, September 2, 1925.)

Hayhurst, W. Pumping acid for acid towers, etc. 20,041. August 13.

Hick, G. M., and Hick, N. G. Method of hardening phenol-aldehyde condensation products. 19,852. August 12.

I. G. Farbenindustrie Akt.-Ges. Disinfectants. 19,719. August 10. (Germany, August 10, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of liquid products from tars, etc. 19,722, 19,723. August 10. (Germany, August 14, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of liquid products from carbonaceous materials. 19,724. August 10. (Germany, August 20, 1925.)

I. G. Farbenindustrie Akt.-Ges. Removal of benzol from gases. 19,725. August 10. (Germany, September 1, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of mixed fertiliser. 19,826. August 11. (Germany, August 14, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of solutions of organic compounds. 19,827. August 11. (Germany, August 21, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of liquid products from coal tars, etc. 19,920. August 12. (Germany, September 2, 1925.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of acid-proof cementing compositions. 20,029. August 13. (Germany, March 25.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 20,032. August 13. (Germany, July 21, 1924.)

I. G. Farbenindustrie Akt.-Ges. Manufacture of photographic silver halide emulsions. 20,115. August 14. (Germany, September 14, 1925.)

Lodge-Cottrell, Ltd., and Metallbank und Metallurgische Ges. Electrical gas-purifying apparatus. 19,819. August 11.

Neumann, R., and Steinschneider, L. Distilling mineral oils, etc. 19,786. August 11. (Czecho-Slovakia, August 22, 1925.)

Nobel's Explosives Co., Ltd., Picton, N., and Richardson, A. C. Nitration of wood cellulose. 19,655. August 9.

Schmidt, K. Splitting up metal alloys into component crystals by centrifuging. 19,727. August 10.

Techno-Chemical Laboratories, Ltd. Drying moist material. 19,828. August 11.

Tottman, H. Solder for aluminium, etc. 19,697. August 10.

Washington Chemical Co., Ltd. Leaf filters. 20,053. August 13.

Wood, R. J. Manufacture of nitro-acridine derivatives. 20,090. August 14. (May 27.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—3d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4¾d. to 5d. per lb. Crude 60's, 1s. 4d. to 1s. 5d.

ACID CRESYLIC 97/99.—2s. to 2s. 2d. per gall. Pale, 95%, 1s. 10d. to 2s. per gall. Dark, 1s. 9d. to 1s. 10d. per gall. Steady.

ANTHRACENE.—A quality, 2½d. to 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.

BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. 3d. per gall., ex works in tank wagons.

TOLUOL.—90%, 2s. to 3s. per gall. Pure, 2s. 3d. to 3s. 3d. per gall.

XYLOL.—2s. 4d. to 3s. per gall. Pure, 3s. 6d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. per gall. Standard specification, middle oil, 6½d. to 7½d. per gall. Heavy, 7½d. to 7¾d. per gall.

NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 3d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 6d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 per ton. Whizzed or hot pressed, £5 10s. to £7 10s.

NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 85s. to 95s. per ton.

PYRIDINE.—90/140, 17s. to 20s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. 6d. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—9½d. per lb. naked at works.

ANILINE SALTS.—9½d. to 7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

o-CRESOL 29/31° C.—3d. to 3½d. per lb.

m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.

p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C., 9d. per lb. naked at works.

DIPHENYLANILINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. 3d. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—5d. per lb. naked at works.

NITRONAPHTHALENE.—10d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.

o-TOLUIDINE.—8d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£7 to £9 per ton, according to grade and locality.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.

WOOD TAR.—£3 to £5 per ton, according to grade.

BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 6d. per lb. Brisk demand.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—6s. 7d. per lb. Resublimed, 7s. 3d.

ACID, SALICYLIC.—1s. 3½d. to 1s. 5½d. per lb. Technical.—10⅝d. to 11d. per lb.

ACID, TANNIC B.P.—2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—8s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—12s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—9s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; ammonium, 2s. 2d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 6d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£40 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. 3d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

IRON PERCHLORIDE.—20s. to 22s., according to quantity.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%, price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 19s. 9d. net per lb., Synthetic, 10s. 6d. to 12s. per lb., according to quality.

MERCURIALS.—Red oxide, 5s. 11d. to 6s. 1d. per lb.; Corrosive sublimate, 4s. 3d. to 4s. 5d. per lb.; white precipitate, 4s. 9d. to 4s. 11d. per lb.; Calomel, 4s. 6d. to 4s. 8d. per lb.

METHYL SALICYLATE.—1s. 7d. per lb.

METHYL SULPHONAL.—16s. 6d. per lb.

METOL.—10s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—4s. per lb.

PHENAZONE.—6s. per lb.

PHENOLPHTHALEIN.—4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

RESORCIN.—4s. to 5s. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—11s. per lb.

TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 11d. to 2s. per lb.

THYMOL.—12s. to 13s. 9d. per lb.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—10s. per lb.

AMYL ACETATE.—3s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb

ANETHOL (M.P. 21/22° C.).—5s. 9d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 1d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 1d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 7d. per lb.

BENZYL BENZOATE.—2s. 4d. per lb.

CINNAMIC ALDEHYDE NATURAL.—17s. 9d. per lb.

COUMARIN.—11s. 9d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—10s. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. 3d. to 11s. 6d. per lb.

HELIOTROPINE.—5s. per lb.

ISO EUGENOL.—14s. 6d. per lb.

LINALOL.—14s. to 17s. per lb.

LINALYL ACETATE.—15s. 6d. to 19s. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—34s. 6d. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 3d. per lb.

RHODINOL.—27s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—20s. 6d. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. per lb.

BERGAMOT OIL.—27s. per lb.

BOURBON GERANIUM OIL.—13s. 3d. per lb.

CAMPHOR OIL.—67s. 6d. per cwt

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—6d. per oz.

CASSIA OIL, 80/85%.—8s. 9d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 7d. Ceylon, 2s per lb.

CLOVE OIL.—7s. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 15s. 6d. per lb.

LEMON OIL.—8s. 3d. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—10s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 67s. 6d. per lb. Japanese, 11s. 9d. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, August 18, 1926.

BUSINESS has slowly broadened during the current week, and there are further encouraging signs that when the present disastrous strike and the holiday season are over, there will quickly be a large improvement in the demand. Prices on the whole keep very steady, and there is little of interest to report in this direction. Export trade has also improved during the current week, and still shows a broadening tendency.

General Chemicals

ACETONE seems to have steadied somewhat, but quotations are still made on the strict merits of the inquiry.

ACID ACETIC continues steady with a fair business.

ACID FORMIC.—Unchanged and in good demand.

ACID LACTIC has been more active, and the price is unchanged at £43 per ton for 50% by weight.

ACID OXALIC.—Although only in moderate request, is very firm at 3⅝d. to 3¾d. per lb.

ACID TARTARIC.—Demand continues small, and quotation is unchanged at 11½d. to 11¾d. per lb.

ALUMINA SULPHATE is without change in value and quite a good business is passing at from £5 10s. to £6 5s. for 17/18%.

AMMONIUM CHLORIDE is still dull, but the market has steadied at £19 10s. to £20 per ton.

ARSENIC.—There is little change in this market, and to-day's value is about £14 15s. to £15 per ton, according to quantity and position.

BARIUM CHLORIDE has been very active, and price shows an upward tendency at about £10 per ton.

COPPER SULPHATE.—There has been some little inquiry, and continental material is quoted at round about £22 15s. per ton, with English material a shade higher.

EPSOM SALTS continues firm and in good demand.

FORMALDEHYDE.—A fairly active business is reported, and price is very firm at £41 to £43 per ton; the tendency is higher.

IRON SULPHATE continues scarce and firm.

LEAD ACETATE is unchanged in value and quite a brisk business is passing at the current quotations of £46 10s. for white, and £43 per ton for brown.

METHYL ACETONE.—A fair demand is reported and supplies can be obtained at round about £55 per ton.

METHYL ALCOHOL.—Firm and unchanged in value.

POTASSIUM CHLORATE is a firm spot, and the product is quoted at £31 per ton for near delivery.

POTASSIUM PERMANGANATE maintains its higher level, and is quoted on the spot at 7¼d. to 7½d. per lb.

POTASSIUM PRUSSIATE.—Firm at 7d. per lb. for spot; quite a good business is passing.

SODIUM ACETATE is not so active, but the price is maintained at £21 per ton.

SODIUM BICHROMATE.—The English makers' price is unchanged at 3½d. per lb, but continental supplies for bulk quantities can be obtained at slightly lower rates.

SODIUM NITRITE is steady and in fair request at £20 10s. to £21 per ton.

SODIUM PHOSPHATE is in good demand at £13 10s. per ton.

SODIUM PRUSSIATE.—Unchanged at 3½d. per lb., with quite a fair business moving.

SODIUM SULPHIDE is unchanged at £13 5s. per ton for solid; continental material is offering at a little cheaper.

ZINC SULPHATE.—Very firm and in short supply at £14 perton.

Coal Tar Products

Owing to the continuance of the coal strike, prices quoted are in all cases more or less nominal.

90's BENZOL.—Quotations are only obtainable for continental material, and the price asked is 2s. 2d. per gallon, f.o.b., continental port, naked.

PURE BENZOL is unobtainable.

CREOSOTE OIL is very firm, the price on rails in the provinces being 7d. per gallon, while the price in London for spot parcels is steady at 7½d. per gallon at makers' works.

CRESYLIC ACID is somewhat scarce, the pale quality 97/99% being worth about 2s. 2d. per gallon on rails, while the dark quality 95/97%, is worth about 2s. per gallon.

SOLVENT NAPHTHA.—There is very little available, and 1s. 10d. per gallon is being paid on rails at makers' works.

HEAVY NAPHTHA is worth 1s. 4d. to 1s. 5d. per gallon on rails, for the few parcels offered.

NAPHTHALENES are unchanged, the 76/78 quality being worth about £6 15s. per ton, and 74/76 quality about £5 15s. per ton, at makers' works.

Latest Oil Prices

LONDON.—LINSEED OIL active; near positions were easier, but the more forward were steady at the close. Spot, £34 10s.; August, £33 5s.; September, £33 10s.; September-December, £33 17s. 6d.; January-April, £34 7s. 6d. RAPE OIL quiet. Crude, extracted, £49; technical, refined, £51; Japanese, crude, August-September, £44 10s.; Japanese, refined, £47 10s. COTTON OIL, steady. Refined, common edible, £45; Bombay, crude, £38; Egyptian, crude, £39; deodorised, £47. TURPENTINE, slow. American, spot, 65s. 3d.; September-December, 66s. 9d.; and January-April, 68s. 9d. per cwt.

HULL.—LINSEED OIL, naked, spot to September-December, £34 12s. 6d.; January-April, £34 17s. 6d. COTTON OIL, naked, Bombay crude, £35; Egyptian, crude, £37; edible refined, £42; technical, £38 10s. PALM KERNEL OIL, crushed, naked, 5½ per cent., £41. GROUNDNUT OIL, crushed/extracted, £43 10s.; deodorised, £47 10s. SOYA OIL, extracted and crushed, £37 10s.; deodorised, £41. RAPE OIL, crude/extracted, £47 10s.; refined, £49 10s. per ton, net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

Nitrogen Products

Export.—The demand for sulphate of ammonia continues quiet. British producers are selling small lots as they become available on the basis of £10 15s. per ton f.o.b. U.K. ports in single bags. No large sales have been reported from the Continent recently; bookings earlier in the year suggest that producers will have little difficulty in maintaining a rising scale of prices until the consuming season culminates in April.

Home.—It is understood that British producers have made large sales to the fertiliser manufacturers and that there will be nothing further available until September; anxiety about future supplies has caused merchants in several parts of the country to make forward bookings. There seems no doubt that the price scale published in our previous issue will be adhered to.

Nitrate of Soda.—The nitrate market continues flat. The decision of the Chilean Government not to reduce the export tax at present has shattered the hopes of those who expected a further fall in the producers' price. The stocks of nitrate in Chile and on the continent tend to mount. The high price per unit of nitrogen at which this commodity is selling compared to the nitrogen cost in other commodities incline us to the opinion that the year 1926–27 will show a further decline in consumption. Producers have been careful this year to omit the fall clause from their price scale so that a big drop next year will not react unfavourably against them and impede their price policy.

Calcium Cyanamide

THE new season's prices for calcium cyanamide have now been announced. For August delivery the farmers' price for 4-ton lots will be £9 2s. per ton, carriage paid to any railway station in Great Britain. The corresponding price for September will be £9 4s. Calcium cyanamide contains 19 per cent. nitrogen and about 60 per cent. lime. Thus this fertiliser remains the cheapest form of nitrogen, both per ton and per unit, on the British market.

Nitrate Sales for August

THE latest list of sales issued by the Chilean Nitrate Committee, London, records disposals dated August 13 and 14, amounting to 422,288 metric quintals. The amount previously advised was 1,089,588 metric quintals, so that the total sales to date for shipment July-November, 1926, are 1,511,876 metric quintals. The above sales are for shipment as follows:—July, 499,800; August, 957,415; September, 29,261; October, 15,240; and November, 10,160. The figures given are for metric quintals.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, August 18, 1926.

BUSINESS in the heavy chemical market still remains exceedingly quiet, any inquiry there is being for small quantities only, although one or two fairly important export inquiries are going around. Prices both for home and continental products show little or no change.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quality and packing, c.i.f. U.K. port; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In moderate demand and price unchanged at 4⅞d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted 1s. 3½d. per lb., less 5% ex store. Offered for prompt shipment at a fraction less.

ACID FORMIC, 85%.—Continental offers are higher. Now quoted £51 10s. per ton, c.i.f. U.K. ports Spot material offered at about £53 10s. per ton, ex store.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Remains unchanged at about 3½d. per lb., ex store. Offered for early delivery from the continent at 3¼d. per lb., ex wharf.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Spot material now on offer at 11¾d. per lb., less 5%, ex store. The same price named for prompt shipment, but could be done at a fraction less.

ALUMINA SULPHATE, 17/18%, IRON FREE.—On offer from the continent at about £5 8s. 6d. per ton, c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.

ALUM POTASH, LUMP.—Spot material quoted £9 5s. per ton, ex store. On offer from the continent at about £7 17s. 6d. per ton, c.i.f. U.K. ports. Crystal Powder quoted £7 12s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at £8 7s. 6d. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 2s. 6d. per ton, c.i.f. U.K. port.

ARSENIC, WHITE POWDERED.—In little demand, spot material quoted £16 5s. per ton, ex store. Offered to come forward at about £15 10s. per ton, ex wharf.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE.—Spot material now on offer at about £9 15s. per ton, ex store. Quoted £8 15s. per ton, c.i.f. U.K. ports, prompt shipment.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station, contracts 20s. per ton less. Continental now quoted £7 15s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton; carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturer's price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental also unchanged at about £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 2s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE, 99/100%.—Continental material on offer at about £22 10s. per ton, ex wharf. English material for export quoted £23 5s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Spot material quoted £40 per ton, ex store. Quoted £39 per ton, c.i.f. U.K. ports, early shipment.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £39 per ton, ex store.

LEAD, WHITE.—Now quoted £39 10s. per ton, ex store.

LEAD, ACETATE.—White crystals quoted £45 per ton, c.i.f. U.K. ports, prompt shipment. Brown about £40 10s. per ton, c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH, CAUSTIC, 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports according to quantity and destination. Spot material available at about £29 per ton.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered on offer at £26 15s. per ton, c.i.f. U.K. ports. Crystals, £28 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE (SALTPETRE).—Unchanged at about £22 5s. per ton, c.i.f. U.K. ports, spot material available at £24 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb., ex store, spot delivery. To come forward 7d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Spot material a trifle dearer at 7¼d. per lb., ex wharf, quoted 6⅞d. per lb., c.i.f. U.K. ports to come forward.

SODA CAUSTIC, 76-77%.—£17 10s. per ton; 70-72%, £16 2s. 6d. per ton; broken, 60%, £16 12s. 6d. per ton; powdered, 98-99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—English material quoted £22 per ton, ex station. Continental on offer at about £20 10s. per ton, ex store, or to come forward £19 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3¼d. per lb., delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station, minimum 4-ton lots. Pea crystals, £14 10s. per ton, ex station. Continental Commercial on offer at about £7 15s. per ton, c.i.f. U.K. ports.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 96-98%, refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Spot material now quoted 3¾d. per lb., ex store. Offered for early shipment from the continent at 3½d. per lb., ex wharf.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60-62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K.; minimum, 5-ton lots, with slight reduction for contracts; 60-62%, solid quality offered from the continent at about £9 per ton, c.i.f. U.K. ports; broken quality, 15s. per ton more; crystals, 30-32%, about £6 15s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; floristella, £9 15s. per ton; ground American, £9 per ton; ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 96-98%, quoted £23 15s. per ton, f.o.b. U.K. ports; 98-100 %, solid, on offer from the continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

SULPHANILIC ACID.—9d per lb.; some home inquiries.

PARANITRANILINE.—1s. 9d. per lb.; some inquiries.

H. ACID.—3s. 3d. per lb.; some home inquiries.

ALPHA NAPHTHOL.—2s. per lb.; some home inquiries.

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, August 19, 1926.

Renewed hopes of a settlement of the coal dispute in the near future have improved the outlook and the market for heavy chemicals, in common with other branches, has responded a little. So far, however, it has not been reflected in any increased buying movement, although this is expected to follow very quickly as activity in the consuming industries gets back to something approaching normal. Chemical shares on the Stock Exchange here have been affected by the more hopeful outlook, and the quotations for most of the leading lines have displayed a firmer tendency.

Heavy Chemicals

An inactive market for sulphide of sodium is accompanied by a continuation of easy price conditions, 60-65 per cent. concentrated solid commanding no more than £10 10s. per ton, and commercial crystals £8 5s. There is also very little demand for either glauber salts or saltcake, though values are little changed at £3 15s. and £3 to £3 5s. per ton. Hyposulphite of soda is held at £15 5s. to £15 10s. per ton for photographic and £9 10s. for commercial, but there is only a quiet business being done in this. Prussiate of soda is a slow seller and about 3¾d. per lb. is now being quoted. Acetate of soda meets with a limited demand at from £20 to £21 per ton. Caustic soda remains firm and a fair trade is being put through; 76 per cent. quality is quoted at £17 10s. per ton and 60 per cent. at £15 2s. 6d. Phosphate of soda continues in limited request, but quotations are unchanged at about £12 10s. per ton. Chlorate of soda is currently offered at 3⅛d. to 3¼d. per lb. The demand for bleaching powder is of moderate extent, with home deliveries steady and unchanged at £8 10s. per ton. Nitrite of soda is still available at £20 per ton, but there is not much call at the moment. Bichromate of soda is unchanged on the week at 3¼d. per lb. Alkali keeps firm and in fair request at about £6 15s. per ton. There is only a limited demand for bichromate of soda but values remain at £10 10s. per ton.

Caustic potash maintains its recent steadiness and about £27 per ton is still being asked in respect of the moderate trade that is being done. Carbonate of potash is also steady and in fair demand at £26 to £26 5s. per ton. Bichromate of potash is rather quiet although it continues to be quoted at 4d. per lb. Yellow prussiate of potash is slow at 6⅞d. per lb. Little change has taken place in the position of permanganate of potash, which is still offered at about 7d. per lb. for B.P. quality and 5d. to 5¼d. per lb. for commercial. Chlorate of potash meets with a quiet demand at 3⅞d. per lb. Trade in sulphate of copper on this market remains of limited volume, with quotations round £23 5s. per ton, f.o.b. Inquiry for arsenic is only moderate, but prices are steady at £13 10s. per ton, on rails, for white powdered, Cornish makes. Nitrate of lead is a slow seller, with current values ranging round £41 per ton. Although the demand is not very active, grey acetate of lime keeps firm on short supplies, and up to £18 per ton has been asked for this; brown is steady but unchanged at £8. Acetate of lead is in slow request at £46 for white and £42 per ton for brown.

Acids and Tar Products

Inquiry for acetic acid has been fair and rates are held at about £38 per ton for 80 per cent. commercial material and £67 for glacial. Oxalic acid is still being offered at 3½d. per lb., without attracting much real buying interest. Tartaric acid is in quiet demand at round 11¾d. per lb., while for citric acid, which is in much the same position, offers are being made on the basis of 1s. 3½d. per lb. or a trifle less than this in some instances.

With supplies of tar distillation products reaching an end, prices of most lines are high and nominal at that. Round 95s. per ton is said to be about the current value of pitch, with solvent naphtha and cresylic acid in the neighbourhood of 2s. per gallon. Creosote oil is said to be about 7½d. per gallon but there is little to be bought.

Tariff Changes

Bermuda.—Regulations issued under the Imperial Preference Act, 1925, prescribe the form of invoice and of certificate of value and origin which must accompany goods in respect of which preference is claimed on their importation into Bermuda. These forms are the same as those recommended by the Imperial Economic Conference for adoption by Colonies basing Customs duty on "invoice price."

Malta.—The Dangerous Drugs Act, 1926, which is to come into operation on a date to be fixed by the Governor, gives effect, so far as concerns Malta, to the Convention of the Second Opium Conference, signed at Geneva on February 19, 1925. The Act prohibits the import and export from Malta, except under licence from the Chief Medical Officer, of medicinal opium and cocaine and ecgonine, and of morphine, diacetylmorphine, cocaine and their respective salts, and of all preparations containing diacetylmorphine and galenical preparations of Indian hemp. Before issuing an export licence for such drugs the Chief Medical Officer is empowered to require the persons applying to produce an import certificate issued by the Government of the importing country, and certifying that the importation is approved.

Ecuador.—The Tariff classification has been completely revised, and now consists of eighteen main divisions (including chemicals, etc.), according to component material or purpose for which used. A copy of the Tariff (in Spanish) may be seen on application to the offices of the Department of Overseas Trade.

France.—A Decree has been issued, under date of August 3, increasing a number of miscellaneous duties, including the statistical tax on denatured alcohol and the taxes on stearic acid and other materials in the form of candles or tapers, vinegar and acetic acid, benzines, benzols, toluenes, and pure or mixed coal tar spirit, etc.

Germany.—The new duties on ferro-alloys are as follows: Ferrochrome, containing 20 per cent. or more of chromium, 7; Ferro tungsten and ferro titanium, containing 20 per cent. or more of alloy metal, 25; Ferro molybdenum, containing 20 per cent. or more of molybdenum, 25; Ferro vanadium, containing 20 per cent. or more of vanadium, 90. (All Reichsmarks per 100 kilogs.)

Mexico.—A recent Presidential Decree, effective as from July 7, provides for the duty-free admission into Mexico (under Tariff No. 258) of mineral oil for lighting and kerosene or petroleum.

Sweden.—Resulting from the commercial treaty between Sweden and Germany, reduced rates affecting adronol acetate, butyl acetate, methyl acetate and calcium cyanamide, etc., are announced, and in virtue of the provisions of the Anglo-Swedish Commercial Treaty are also applicable to these substances when of British origin.

Asphalt from Petroleum

Sales of asphalt and asphaltic materials manufactured from petroleum at refineries in the United States during 1925 amounted to a total of 3,178,370 short tons, which is an increase over the 1924 sales of nearly 100,000 tons, or 3 per cent. These sales were valued at $42,825,770, an increase over 1924 of 19 per cent. Of the total sales during 1925, 1,206,700 tons, with a value of $15,305,760, was manufactured from domestic crude petroleum, and 1,971,670 tons, with a value of $27,520,010 was produced from foreign crude petroleum. The Atlantic Seaboard refineries held first rank as manufacturers of asphalt in 1925, their sales of 1,313,270 tons (practically all of which was from foreign petroleum) comprising 41 per cent. of the total for the United States. Asphalt for paving purposes was again the most important variety, its production registering a gain in 1925. Asphalt to be used in the roofing and waterproofing trades was second in importance, but its production remained stationary as compared with 1924.

Sales at the mine of native asphalt and related bitumens in the United States in 1925, including bituminous rock, gilsonite, and wurtzilite (elaterite), amounted to 584,850 short tons, valued at $4,148,400. This is an increase over 1924 of 4 per cent. in quantity and of 5 per cent. in value. Of the various products bituminous rock was first in quantity and value. Imports (general) of asphalt of all kinds for 1925 amounted to 122,162 short tons, a decrease from 1924 of 24 per cent. Exports in 1925 amounted to 121,849 short tons, of which 89,014 tons was petroleum asphalt.

Company News

BOLCKOW, VAUGHAN AND CO.—The directors announce that the dividend on 5 per cent. shares due August 15 will not be paid. Preference dividend is paid to December 31, 1923. The last dividend on Ordinary was 8 per cent. for year ended June 30, 1921.

GOODLASS WALL AND CO.—The directors of this paint and varnish manufacturing company state in their report for the year that including the balance of £15,968 brought forward there is a credit to profit and loss account of £72,909. This compares with £50,969 last year, when the amount brought forward was £13,400. The Preference dividend having been paid, a dividend is recommended on the Ordinary shares of 2s. 6d. (12½ per cent.) per share, less tax, compared with a dividend of 10 per cent. last year; £2,598 is to be written off motor vehicles, furniture and fixtures (against £1,866), £12,000 goes to general reserve (against £2,000 to reserve from doubtful accounts, contingencies, etc.).

INTERNATIONAL NICKEL CORPORATION.—The demand for the metal steadily increases, and the corporation is adding new units to the Ontario plant that will ultimately permit of an extra output of 3,600,000 lb. of the electrolytic description, which is the kind most in request. Meanwhile earnings have continued to expand, the gain in net profit for the first quarter of the current year being close on 6 and for the second quarter nearly 9 per cent., the average for the six months working out at 7¼ per cent. This is after making more liberal allowances for depreciation and the depletion of ore reserves. The distribution on the Common stock has been maintained at 8 per cent. per annum in quarterly payments, and despite the additional disbursement this year the accumulated surplus has been enlarged by £166,800 to £3,227,200.

WALTER SCOTT, LTD.—The net loss of this company of ironmasters and colliery proprietors for the year ended June 30 was £13,710, plus debit balance brought in £25,698, directors' fees £1,000, and interest on 4 per cent. debenture stock for year £12,000, making £52,409. The report states that in view of the general position of the steel trade throughout the country and the fact that even the newest and most up-to-date works for some years past have been and still are operated at a loss, the directors have come to the conclusion that it is not in the interests of the shareholders to spend the large sum necessary to recondition and put into operation the steel works at Leeds. They have, therefore, decided to dismantle the Bessemer and rolling mill departments. Two blast furnaces were in operation for ten months of the year, but since the commencement of the coal strike it has been impossible to obtain sufficient raw material to keep them working. Notwithstanding the general depression and the stoppage during the last two months these furnaces, together with the slag and asphalt plant, have been able to show a small profit. The collieries have been carried on with great difficulty, and in spite of Government aid a substantial loss has been incurred

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

DISINFECTANT.—The South African Railways and Harbours are calling for tenders to be received by September 23, for the supply of disinfectant fluid. Firms desiring to offer British made disinfectant can obtain further particulars at Room 52 at the offices of the Department of Overseas Trade. (Reference No. BX. 2796.)

ACCESSORIES FOR CHEMICAL INDUSTRIES, ETC.—A Belgian agent in Brussels desires to secure the representation on a commission basis for Belgian and the Belgian Congo of British manufacturers of machinery and accessories for gas works and chemical industries. (Reference No. 224.)

CONCRETE SLAB MAKING MACHINE.—The Commissioners of the Victorian Government Railways invite tenders for presentation by October 27, 1926, for the supply and delivery of one concrete slab-making machine. Local representation is essential. (Reference No. AX 3468.)

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to September 18, 1926.

"GRASSELERATOR."

468,357. For chemical substances for use in accelerating the vulcanisation of india-rubber. Class 1. The Graselli Chemical Co. (a Corporation organised and existing under the laws of the State of Ohio, U.S.A.), 1,300, Guardian Building, 629, Euclid Avenue, Cleveland, Ohio, U.S.A., manufacturers. March 22, 1926.

"ORCHID."

469,117. For varnishes, paints, enamels, dry colours and chemical substances for use as turpentine substitutes. Class 1. William R. Todd and Son, Ltd., Marfleet Avenue, Marfleet, Hull, Yorkshire, manufacturers. April 17, 1926.

"NEWDROG."

470,659. For calcium carbide. Class 1. H. J. Cordwent, trading as Henry J. Cordwent, 20 and 22, Queen Street, Newton Abbot, merchant. June 16, 1926.

"GALLAS."

471,070. Furnace cements. Class 1. The General Refractories Co. Ltd., Kelham Island Firebrick Works, Alma Street, Sheffield; and 28, Blonk Street, Sheffield, miners, quarriers and manufacturers. July 1, 1926. (To be associated. Sect. 24.)

"SPOPS."

471,111. For paints, colours, varnishes, enamels and japans. Class 1. A. Riley, 399, Stockport Road, Longsight, Manchester, manufacturer. July 2, 1926.

"ONAPANO."

471,112. For particulars, see No. 471,111.

"COCK."

465,929. For basic phosphate, being a manure made at Spring Vale, near Bilston, Staffordshire. Class 2. Stewarts and Lloyds, Ltd., 41, Oswald Street, Glasgow; and Spring Valve Furnaces, near Bilston, Staffordshire, manufacturers. January 8, 1926. Registration of this Trade Mark shall give no right to the exclusive use of the words "Spring Vale."

"FABRICOL."

471,197. For chemical substances used for veterinary purposes. Class 2. Osmond and Son, Ltd., Standard Chemical Works, Doughty Road, Grimsby, manufacturing chemists. July 6, 1926. (By consent.)

"VARICOPHTIN BRAND."

471,440. For chemical substances prepared for use in medicine and pharmacy. Class 2. H. R. Napp, Ltd., 3 and 4, Clements Inn, Kingsway, London, W.C.2, wholesale chemists. July 14, 1926.

"SINTRITE."

468,307. For raw or partly prepared mineral substances used for lining furnaces, not included in other classes. Class 4. The General Refractories Co., Ltd., Kelham Island Firebrick Works, Alma Street, Sheffield; and 28, Blonk Street, Sheffield, miners, quarriers and manufacturers. March 20, 1926. (To be Associated. Sect. 24.) (By consent.)

Southwark Paintworks Fire

A DESTRUCTIVE fire which broke out on the morning of Saturday, August 14, in the oil and colour works of S. Ward and Co., in Great Guildford Street, London, S.E., completely burnt out the premises. Employees made a courageous dash through the smoke and flames in a successful attempt to secure the firm's books. The fire was not put out until it had been blazing for nearly two hours, by which time the whole of the interior had been burned out and three floors had crashed to the ground.

96/3/56

FIRTH

STAYBRITE

THE NEW ACID-RESISTING STEEL

The whole of the Firth experience in the application of Stainless Steels to hundreds of problems similar to yours is at your disposal for the asking. May we help you by literature or by personal technical service?

USERS and manufacturers of Chemical plant throughout the country are heartily endorsing the claims made for this remarkable new acid-resisting steel.

Here is a steel with excellent mechanical properties—steel which is completely immune from the attack of scores of the most corrosive acids (including nitric), alkalies and chemicals, and also quite unaffected by sea water and atmospheric conditions.

The chemical plant maker can readily obtain Staybrite in any of the following forms :—

BARS, RODS, PLATES, SHEETS, TUBES, STRUCTURAL SECTIONS, WIRE, FORGINGS, AND CASTINGS.

May we send you full particulars?

FIRTH "STAYBRITE" (the new super-rustless and super-malleable steel) has a yield point of about 15 tons per square inch and an elongation of 55% to 70%. This exceptional ductility is combined with maximum corrosion-resisting qualities, which it possesses to a remarkable degree. It may be cold-pressed to a degree far in advance of the so-called "Stainless Iron," and, moreover, it presents no difficulties in manipulation, since it can be welded, soldered, brazed and rivetted without trouble.

THOS. FIRTH & SONS, LIMITED, SHEFFIELD

A New Carbon Monoxide Detector

A CARBON monoxide recorder and alarm for the detection of gas in tunnels has been devised by chemists on the Pittsburgh experiment station of the U.S.A. Bureau of Mines. The principle employed in the design of the new recorder is measurement by means of thermocouples of the increased temperature of the gases when the carbon monoxide and oxygen react chemically in the presence of a catalyst, the thermoelectric effects being recorded by means of a recording potentiometer. After extended experimentation and development a recorder was produced which is not appreciably affected by the presence of other gases and which is capable of indicating and continuously recording the highly diluted carbon monoxide. Operation over a period of many months has proved it to be reliable.

Another apparatus has been designed to enable health officials to ascertain whether the ventilating machinery is operating properly. The recorder is equipped with a bell to warn attendants in the fan house should the carbon monoxide in its section at any time exceed 4 parts in 10,000. Further, the recorder can effect considerable saving in power at the fan house if the volume of air is reduced when the carbon monoxide is low.

Carbon monoxide recorders should be useful for promoting economy in boiler furnaces, blast furnaces, and other metallurgical and chemical equipment, and for investigations pertaining to them. They may be useful wherever carbon monoxide is an important factor or in gaseous processes when carbon monoxide can be introduced as an inert component. The recorder has proved to be the most sensitive instrument known for determining carbon monoxide. The sensitivity of one part per million is readily attained.

Detailed descriptions of these devices are given in Technical Paper 355, "A Carbon Monoxide Recorder and Alarm," by S. H. Katz, D. A. Reynolds, H. W. Frevert, and J. J. Bloomfield, copies of which may be obtained from the Bureau of Mines, Department of Commerce, Washington, D.C.

B.I.F. Not for Wembley

THE advisory committee to the Board of Trade for the British Industries Fair, which consists of elected representatives of the different sections of exhibitors, has refused to hold the fair in the British Empire Exhibition grounds at Wembley. A leading member of the Committee stated that there was a large majority for the White City, Shepherd's Bush, because it is very much more accessible. Government officials had been inclined to favour Wembley for the Fair ever since the first year of the British Empire Exhibition, but although it was true that Wembley Park was only a quarter of an hour from Baker Street station, there was a considerable walk from the station to the exhibition halls.

New Companies Registered

ARTHUR DAVIS AND SON, LTD.—Private company. Registered August 12. Nom. cap., £1,000 in £1 shares. Chemical manufacturers, etc. Directors: Mrs. Isabel M. Davis, Linton-on-Wharfe, Collingham, Leeds, and C. Davis.

EPOC POLISHES, LTD.—Private company. Registered August 13. Nom. cap., £500 in £1 shares. To acquire the trade mark "Epoc," No. 455,175, in class 50, to adopt an agreement with J. C. Cope, and to carry on the business of manufacturers of enamels, polishes, etc. Directors: G. Shaw, Scarborough, engineer; A. H. Andrews; H. H. Bailey and J. E. Bailey, of Heaton Mersey; and J. C. Cope, Beaumaris. Registered office: Harwood Road, Heaton Mersey, Lancs.

MORLITE, LTD.—Private company. Registered August 17. Nom. cap., £1,000 in £1 shares. Objects: To acquire the business of Marriott and Co., at 37, Silver Arcade, Leicester, and the recipes, formulæ, etc., of processes of manufacturing optical and vitreous preparations known as Morlite.

NORGINE PHARMACEUTICAL PRODUCTS (LONDON), LTD. Private company. Registered August 14. Nom. cap., £5,000 in £1 shares. Manufacturers, wholesalers or retailers of chemicals, pharmaceuticals, etc. Solicitors: Herbert Oppenheimer and Co., 1, Finsbury Square, E.C.2.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

ASSOCIATED DRUGS AND CHEMICALS, LTD., 1, Union Street, Stratford. (C.C., 21/8/26.) £17 12s. 10d. July 5.

SENIOR CROZIER AND CO., LTD., Union Street, Stratford, manufacturing chemists. (C.C., 21/8/26.) £10 15s. 10d. July 16.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

CLARK, NETTLESHIP AND BAILEY, LTD., Leicester, manufacturers of proprietary medicines, etc. (M., 21/8/26.) Registered July 30, £7,000 and any further advances mortgaged to Building Society; charged on 43, Belvoir Street, Leicester. *£14,805 17s. 4d. April 8, 1926.

DENNIS (L.) AND CO., LTD., Walkden, chemical manufacturers. (M., 21/8/26.) Registered August 6, £16,000 debentures; general charge. *Nil. February 19, 1926.

HEPPELIS, LTD., London, S.W., chemists. (M., 21/8/26.) Registered August 6, collateral or substituted security (supplemental to deeds dated December 22, 1924, and June 2, 1926), to F. J. M. Pyne, and another, 15, Lombard Street, E.C., bank managers; charged on part of 77, 78 and 79, Strand, W.C. *£48,000. October 26, 1925.

Satisfactions

PURITAS DISINFECTANTS CO., LTD., Leicester. (M.S., 21/8/26.) Satisfactions registered August 9, £4,000, registered November 26, 1924; and £2,000, registered February 2, 1926.

STANCOURT, SONS AND MUIR, LTD. (late STEINHOFF SONS AND MUIR, LTD.), London, E.C., colour manufacturers, etc. (M.S., 21/8/26.) Satisfaction registered August 3, £4,000, registered October 6, 1922.

London Gazette, &c.

Company Winding Up Voluntarily

KEENE'S TRADING CO., LTD. (C.W.U.V., 21/8/26.) By Special Resolution, July 24th, confirmed August 9th. A. C. Vincent, 13, Queen Street, Cheapside, London, E.C.4., incorporated accountant, appointed liquidator.

New B.D.H. Catalogue

THE July, 1926, catalogue of B.D.H. fine chemical products, including organic and inorganic chemicals, analytical reagents, indicators and standard stains, comprises 104 pages. It is divided into the following sections: 1. Inorganic and organic chemicals; 2. Analytical reagents "A.R.," guaranteed to conform to the standards of purity given in *The B.D.H. Book of A.R. Standards*; 3. Solutions employed in volumetric determinations, including reagents and solutions for water, urine, gas, and other special analyses; 4. Indicators for determination of hydrogen ion concentration, including special outfits and test papers; 5. Standard microscopic stains and staining solutions, and requisites for microscope work; 6. Aniline dyes for technical purposes; 7. Minerals, including crystals for wireless purposes.